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General Scientific

AFTER-WAR PREVENTION OF SEXUAL INFECTION IN CIVIL LIFE.*

MAJOR JAMES BAYARD CLARK,
M. C., U. S. Army (New York),
Base Hospital, Camp Logan, Texas.

The purpose of this paper is to speak in a practical way of sex disease prevention in civil life, and by illustrating the equipment and describing the method of giving prophylaxis as developed at this camp hospital, point out an encouraging simplicity concerning this side of the subject.

As always, necessity has mothered invention, and a long step forward has been made in prophylaxis and treatment of sexual infection by the army. This fact is fast becoming common knowledge to all intelligent communities. The staggering statistics which have shown what vast numbers were thus infected when called into service are now broadly known.

These facts have suddenly put upon the public a singular responsibility. Already some of the more advanced states have begun a state-wide campaign against these diseases; and a nation-wide campaign, equally broad and forceful as the great march upon tuberculosis a few years ago, is now in many minds.

That gonorrhea and syphilis can be as effectually fought and brought under control as typhoid, cholera or tuberculosis there is not the smallest doubt; but the facts must be faced and not frivoled with, if the war upon these maladies is to be won.

The fight can be begun with no better weapons than the War Department has employed.

The program it planned and pursued was divided into four main classes:

- (1) Social measures to diminish sexual temptation.
- (2) Education of soldiers and civilians in regard to these diseases.
- (3) Prophylactic measures.
- (4) Medical care.

It is to the practical, or let us say scientific, side of prophylaxis that this paper points. From a bacteriological standpoint the microorganisms we are after, the gonococcus, the treponema pallidum and the etiological organisms of the chancroid are all known to be weak and easily killed. Of so little endurance are they

that it is difficult to keep them alive in the laboratory. So well are their life history and habits known that work among patients thus infected involves only the very minimum of risk. They are unable to endure even the simplest antiseptics; even soap and water promptly used is sufficient safeguard against a surface contact with them. One can sum up their strength by saying that they are probably the easiest of all known pathogenic organism to overcome; and knowing their mode of transfer as we do the diseases they cause are probably the easiest of all to prevent.

So far then our pathway toward prevention is made easy. To go into the subtle extension, the secure hold and the loathsome lesions these germs are capable of causing once they have gained entrance into the human body is aside from this discussion. The point we are here pursuing is prevention and not cure.

But to attain this prevention we must promptly bring our prophylactic measures into play. This can be made as readily understood as the fact that preventive measures are possible.

It can be stated with confidence that the prophylactic treatment about to be described will prevent infection in more than 99% of the cases if used within one hour after exposure, and if it is properly performed. It will probably do as much as this in two or three hours after exposure; but as to this only further experience will make us confident. As to the desirability and the economy, as well as the morality of both preaching and prescribing scientific means of safeguarding fecundity and even life itself from the insidious slavery of these sex sicknesses, is now justified by the commonest sense of justice in every sincere soul who is a looker-on, and has the eyes to see the tragedy of these terrible diseases in those wholly innocent and beyond any suggestion of censure.

After the tide has been stemmed there can be none who will not be grateful for some clear visioned prophet who will point out that path within the limits of nature's laws whereby we may keep a better ethical balance, free from the sorrow that these sicknesses impose.

In the author's opinion there should be at least one prophylaxis, or early treatment station to every twenty-five thousand city inhabitants. There should be two or three treatment rooms in each one of these stations. Nine or ten feet square is ample size. There should

*Published with the permission of the Surgeon-General, U. S. Army.

be a good overhead light. The rooms should be painted white with a linoleum or washable floor. They should be kept at all times as clean as an operating room should be kept.

In a hospital is perhaps the best place for these stations. Here it will be that a suitable attendant can more readily be found. It is important that attendants should be mature high class conscientious men. From the standpoint of applicants, especially at the beginning of such a campaign, the hospital would inspire more confidence and create less self-conscious hesitation.

Next to a hospital, rooms in conjunction with the health board quarters should be chosen. It goes without saying that all prophylaxis stations should be directly controlled by the Health Officer, who should be responsible in every way for its functions. Just as he is responsible for the proper notification of its existence, location and purposes to all whom it may possibly concern. And just as he shall be responsible for the accuracy of the records relative to its use.

Its equipment is an extremely simple matter. The central furniture in each treatment room should be a washstand on the order of the stand here illustrated, a small table and a chair for attendant to take the records, and a wall-closet or a shelf for supplies completes the necessary paraphernalia.

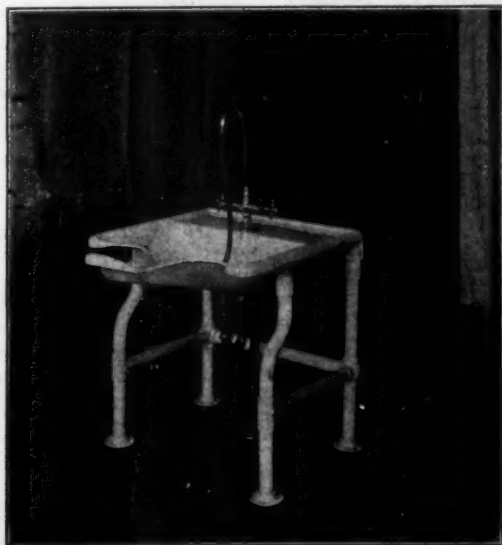


Fig. I. The Straddle Stand.

The straddle stand pictured here is but incidental to the object of this paper, for when it was devised by the writer and adopted by the War Department in the autumn of 1917 it was later described and published in the *Journal of the American Medical Association*, January 12, 1918. Since that time it has been very considerably improved by being put on a floor base, but otherwise remains the same.

In giving the following description of the army prophylaxis, which until improved upon must remain the standard best to be followed, the reader is asked to visualize the straddle stand in this description as by its use it has been demonstrated that prophylaxis has been reduced to a very simple as well as clean and rapidly performed procedure.

When the applicant presents himself he should expose himself from the navel to the knees and sit on the stand, slipping into place with feet extended until he is relaxed and comfortable and his thighs fit closely

to the concavities on either side of the seat, and which completely protects his clothing from wetting and staining. This exposure gives a good opportunity to note any obvious discharge or disease of the skin.

The stand is built from an anatomic standpoint to seat comfortably almost any sized man.

He should be told first to empty his bladder, in order to flush the urethra. He is then told to wash his hands well with soap and water, when he will be



Fig. II. Method of Using the Straddle Stand.

ready to go on with the treatment as instructed.

The illustration will show that the straddle stand is so built that it has room for four containers and within easy reach of the patient. These containers represent the four steps in the treatment and are set out in the order of their using from left to right as the patient sees them.

First is the soap (tincture of green soap preferable). He is instructed with this to give his genitals, upper thighs and pubic region a thorough soaping which is followed by a running water wash from the flexible hose attachment. This is perhaps the most important part of the prophylaxis.

Second. A bowl of bichloride of mercury solution 1 to 2,000 in which is a cotton ball to be used for swabbing the area already soaped and irrigated.

Third. A small cup with about 30 c.c. of 2% protargol solution freshly made with distilled water and a small hand syringe. With this he is instructed to inject about 10 c.c. or enough to distend urethra. This is held in place by the syringe for half a minute. The procedure is then repeated.

Fourth. After the patient had dried his genitalia (a roller paper towel rack within reach is the best) he is instructed to rub in over the area washed the 30% calomel ointment from the fourth and last container. He then covers the parts with a paper towel to protect his clothing and is ready to dress. The treatment being complete a record is made giving the time of treatment and the time of exposure.

If the exposure is more than three hours previous it is well to have the patient return for observation every other day for a week and then twice a week for three weeks to give him the benefit of the earliest possible treatment in the event of the development of disease.

This makes a good basis to begin the work of prophylaxis in civil life.

As soon as the patient has gone the equipment should be thoroughly washed and syringes boiled; so that each patient is assured of a fresh and clean layout.

The most important feature of the equipment, as it has been set up and employed here, is that it standardizes a clean and correct performance of the present prophylactic treatment, just as its use impels the attendant toward uniformity.

WITH A BASE HOSPITAL IN FRANCE.

HOWARD LILIENTHAL, M. D.,

Lt.-Colonel Medical Corps, U. S. Army.

New York.

We sailed from New York early in February, 1918, one bitter cold day. The Unit was one of those organized by the American Red Cross in connection with a metropolitan hospital. We had the regular quota of majors, captains and lieutenants, sixty-five nurses, a few stenographers and one hundred and fifty enlisted men, the latter body being made up of individuals from all strata of society with a fair sprinkling of barbers, cooks, plumbers and other branches of the "working" fraternities, besides a few professional men, lawyers, business men and gentlemen of means and leisure. Most of our medical officers had been trained in the camps in America and the entire unit had been licked into shape by our commanding officer, a regular army surgeon, in one of the large armories. Our up-to-date equipment, sufficient to fill many freight cars, had gone forward in advance of the organization. The date of our departure had been kept a profound secret, not shared by our own families and possibly not even by the Boche, but we were filled with the spirit of a great adventure which partly mitigated the sadness of the parting from our loved ones.

There followed nineteen days on the water and it seemed that Father Neptune must have been on the side of the enemy if one might judge by his apparent efforts to hinder our progress toward the scene of the struggle; and still perhaps not so much against us after all since the mountainous waves and furious gales would discourage the activity of the submarines. The trip was very different from the usual trans-Atlantic pleasure jaunt, thousands of troops sharing with us our noble ship, truly a shining mark for our enemies; and still in spite of the darkened decks and ports—we were not permitted even to smoke cigarettes on deck after sundown nor to display a luminous watch—the time passed pleasantly with dances, lectures and other entertainments, all interspersed with ominous life boat drills and disquieting conjectures as to our future. Once in the actual danger zone, cork life preservers had to be worn constantly, much to our discomfort, and occasionally our good ship would suddenly 'bout face and beat it backward for hours at a time because of U boats ahead, none of which fortunately were encountered.

One beautiful sunny day we entered the Clyde where we met the first signs of the tremendous war activities "Over There." Our vessel was one of the first American transports to enter this river and we were greeted with cheers and shouts of joy from both shores of the narrow stream, the channel of which was almost filled by the bulk of our steamer. It was indeed an inspiring sight; the hundreds of craft of all description in every stage of construction, the workmen and the women in overalls running down to the banks in joyous curiosity to greet with shouts and cheers their new allies.

At Glasgow we separated from our nurses, not to see them again for many weeks. Our hospital would not be ready to receive patients and in the meantime the nurses were distributed all over France, one group

going to the front, another to the west coast, others to intermediate points, but all greatly envied by us because they were plunged at once into active war work. Four days later after a channel crossing and railway trip, which could be very mildly described as "uncomfortable," we arrived at the little village near the site of the old monastery which had been selected for our hospital. To our disgust we were hundreds of miles from the front and it was hard for us to be consoled even by the beautiful buildings and the exquisite rural country of southern France which was to be our home. The buildings had not been completed and much work remained to be done. With the aid of the engineers and our own enlisted personnel roads had to be built, plumbing and other equipment had to be installed and alterations had to be made to convert the ancient chartreuse with its annexed buildings into an American hospital. The task looked endless. Perfectly good surgeons had to be converted into mess officers, laundry managers and bookkeepers, while opportunities for practicing our profession seemed very remote. Meantime the quarters of the officers had to be rendered habitable and physicians, surgeons, oculists, gynecologists and neurologists set to work improvising furniture out of packing cases, vieing with each other in producing tables, washstands, desks and wardrobes, amateurish though efficient. Gasoline could not be purchased from the French and our own motor vehicles were employed strictly for Government work, but we enjoyed exploring on bicycles the picturesque roads and hills and the historic ancient villages.

The advent of a civilian patient with an axillary abscess or a sprained ankle became a matter of absorbing interest to us who had come to France to do big war surgery. Even obstetrics was not neglected and the neighboring peasants were not slow to avail themselves of our services, their own medical men having been requisitioned by the Government.

We were fortunate in having our equipment delivered promptly the first cars appearing in less than two days after our arrival. Then followed frequent visits by various inspecting officers and finally about thirty of our nurses came and we were truly ready to begin. Meantime officers had been gradually detached for service in more active organizations until our personnel was pretty well depleted. Then one happy day we received the welcome news that a hospital train with wounded would arrive; but in vain we waited, some patient-hungry institution up the line having captured our train. At last, however, following a battle a few days before, five hundred wounded were suddenly unloaded upon us. Our Unit had been originally organized to take care of exactly that number of cases, but before the war was ended, due to the natural elasticity engendered by necessity, nearly three thousand sick and wounded had to be cared for by us. But these first boys from the front with their huge, gaping, debrided wounds, their gunshot fractures, their mustard gas burns and all the horrible medical and surgical complications of modern warfare were an instant inspiration to us all. We found that we were not really five days from the front but only two days by hospital train. There was plenty of surgery to do and with the gas and cardiac and other cases lots of medicine as well.

Our operating room with its four tables was busy weeks at a time from morning until night and often far into the night. It will be remembered that this was a Base Hospital, quite a different institution from the Evacuation Hospitals near the front where later the writer had the opportunity to serve. In these Evacuation Hospitals the work came by rushes; sometimes

days and even weeks of idleness, then hectic activity night and day under the highest possible pressure and always within sound of the guns and with the planes of friend or foe over our heads—with news of the battle at first hand and with the thrills of red war always near.

At the Base the work is equally or even more interesting from the purely surgical standpoint, although naturally it is not in the atmosphere of the actual struggle. But the stories of our patients, their part in the fight, their tales of heroism and bravery modestly told were fascinating and wonderful beyond words. After Chateau Thierry we had many of the infantry and the marines who had given such a glorious account of themselves, and yet, there was no bravado; everything was recounted and described in a plain matter of fact style, all the more convincing and charming.

The writer had the opportunity in one of these base hospitals to operate in two cases of machine gun wounds of the chest. The first patient was a young lieutenant from beneath whose scapula I removed a bullet in local anesthesia. His experience had made him nervous, or as they used to say "shell shocked." I handed him the bullet which he eagerly grasped gloating over it. "That will make a fine souvenir," said he. The next man was a Montana farmer cyanosed and gasping for breath, his right chest filled with infected blood and the bullet lying between the lower lobe of his right lung and the diaphragm. "They told me back home to get a Boche," he gasped before the incision was made, "I got three and now if they got me I ain't got no kick coming." He was greatly relieved by the evacuation of the infected blood, and when I handed him the bullet he rolled it about between his fingers and to my surprise handed it back to me. "Don't you want it for a keepsake?" said I. "Naw," was the answer, "I only wanted to heft it and to feel of it. You kin have it." A bullet more or less in his young life was evidently of not much consequence.

The practice of surgery and of medicine in a well organized and well equipped base hospital is truly delightful. All the petty jealousies and formalities so common in civil life are absent. The work is divided so as to have it done as expeditiously and smoothly as possible. There is beautiful team play, all working for "the cause." If an x-ray examination is urgently needed there is no waiting for an appointment, it is done at once. Pathological and bacteriological examinations are carried out with a cheerful rapidity truly refreshing. Consultation with another surgeon or with a medical man can be had "while you wait."

The highest class of dental work is on tap for those who need it but here the good old fashioned dentist's appointment is unavoidable.

The nurses work cheerfully and with almost religious fervor. They are untiring and you don't hear about "half days," "time off," etc. A nurse must be truly ill if she is not found at her post.

Their work too is often far more important than that of civil life. In times of stress many large surgical dressings are in their charge. The nurse anesthetist has proven herself of the greatest value, and often the soothing feminine presence appears to add a hypnotic influence to that of the narcotic drug and the patient passes under the anesthetic quietly and without struggle. In the rough life near the front these women have shown themselves to be good sports, rarely, if ever, complaining of the changed and uncomfortable conditions. Our sick and wounded boys have been so brave and patient through all this terrible time that one wonders whether because of comparisons there may not be

an apparent lack of sympathy, when after the war these same nurses will be caring for invalids who may be inclined to demand petting and who make the most of what must now look like trivial ailments, but surely we can trust the good sense and professional skill and the ready sympathy of the trained woman who has found in this noble profession her vocation. Base hospital life overseas has its pleasant and amusing sides as well. Thanks to the Red Cross, the Y. M. C. A. and other similar organizations, our patients were kept amused and interested. There were concerts, vaudeville shows, movies and other entertainment in' the greatest profusion.

For days before October 30th there were mysterious doings in which nurses, patients and corps men joined in preparation for the giant Hallowe'en celebration. The nurse in charge of each of the ward buildings tried to make her party the most attractive and there were illuminations and decorations which made the fete resemble a strange kind of college class day. Band concerts and minstrel shows added to the festivities. There were "eats" also, wonderfully elaborated from the material obtainable from our commissary and the usual Hallowe'en games which added a home touch. It was all greatly appreciated by the soldiers, so many of them from the agricultural districts of our country. Even the unsightly Balkan frames over the fracture beds were decorated with wild flowers and foliage from the nearby fields and woods.

The feeding of our thousands of "s and w" was efficiently managed. There was a central kitchen for the patients and several other kitchens for the personnel. While those at home were denying themselves sugar, wheat and other luxuries and necessities, those in our hospitals abroad were made happy and comfortable through this generosity, but nothing could be too good for our men who bravely and uncomplainingly suffered unspeakable things for the greatest cause in history. This is not the place to describe the misery, the pain and the horrors of the fighting line; by this time you are all familiar with the details as well as they can be pictured in magazines, books and newspapers, but to one who has seen even a little of it the description seems inadequate, and to us at the base hospital it was never forgotten that nearly every one of our patients had passed through a little bit of purgatory before his safe arrival under our roof. We were ready to forgive almost anything for that.

At last came rumors of an approaching end to the fighting. The signs all pointed to a glorious ending. We had the enemy on the run. One happy day the message came that the armistice had been signed—the war was over. You might have expected manly shouts and cheers of victory, but no; instead of the full-throated masculine cry, these poor homesick boys simply shrieked and squealed with joy like happy children. It was a strange and most unexpected sound, and to me there in the hospital, more poignant than could possibly be the orgies of rejoicing in the cities. After that everybody wanted to get home and the hardest part of the war was, and still is, to keep unimpaired the rigid discipline so necessary all through the ordeal and fully as important now.

For myself I can say the longest time I ever put in was the thirteen-day trip to our well beloved United States.

52 East 82nd Street.

Painful weak feet with no deformity are due to muscular weakness and loss of tone. These feet require physiological or therapeutic shoes, and exercises to strengthen the entire muscular and nervous system.—(Ashley).

HIKING IT WITH A BRITISH FIELD AMBULANCE.

HAROLD M. HAYS, MAJOR M. C., U. S. Army (discharged), New York.

When I left America in October, 1917, to join the American Base Hospital No. 2 (Presbyterian Hospital, New York City) to do my special work, I never thought for a moment that within one month I should be up on the front line with a British Field Ambulance. I had always been afraid to know an Englishman too intimately and was sure that if I ever talked to one long enough we should have a row over the rights of the American Revolution or else that he would close up within his hide bound shell, look at me superciliously or condescendingly and make me feel that every American was a braggart, doctors included, and that the English controlling four-fifths of the world were too good for the rest of mankind. I can show my inclinations no better than to say that when, before I left America, I was asked if I would serve with the British I answered that I would sooner not go abroad. In order that there may be no misunderstanding of my feeling now, let me cry, "God bless the British." They are even big enough today to admit that our Revolution saved England—which is going some, you will admit.

On a dark and stormy morning in late November, 1917, I tucked my movement orders carefully in my overcoat pocket and jumped into an ambulance with Lieuts. Morgan and Cook, who were to accompany me, and rode the seventeen miles to Havre where we were to board a train for the front. To say that we were excited would be expressing it mildly. It wasn't the bitter, damp cold wind that made the little hairs on our backs stand on end. It was the anticipation of going into a new and dangerous WORLD. No one can appreciate the feeling unless he has been there himself and at this late day I can hardly understand it for there is no discomfort or danger in front line life—that is if you smile and fatalistically consider that life at the best is short and uncertain.

I cannot go into details of that long and momentous ride to the front now. After twenty-four hours of traveling in railroad coaches which at first boasted of velvet cushions and then ended up with manured floors which horses had just left after attending to the wants of Nature, we arrived within the sound of the guns. In awe-struck wonder we gazed at the flashes in the sky and anticipated the time when we should be near enough to a bursting shell to feel the shrapnel on our helmets.



1. A Destroyed Village between Baupaupe and Cambrai, Dec., 1917.

We at once inquired for the location of the 36th Division to which our orders assigned us. Everyone seemed to know where the 36th Division had been but no one knew where it was then. Finally some kind-hearted individual gave us a direction which sounded reasonable and so before the sun was up we found our-

selves and our mud-soaked baggage about five miles away from where we belonged.

I shall never forget our search for the A. D. M. S., who corresponds to our Division Surgeon. He was tucked away in a little village outside of Roquiny in a one-story shack which at one time may have been a part of a habitable mansion. We walked round the town a dozen times before we found him. I could hardly believe it possible that a man could look so spick and span amid such surroundings. His tall, manly, upright form was encased in an immaculate uniform, his gray hair was brushed down tight, his face was cleanly shaved, his Sam Browne belt, leggings and boots were highly polished. But what was best of all he had a hearty smile of welcome on his face. I couldn't find that he was any different than an American—except that he was perhaps more considerate because we were strangers.

Within a few moments he had ushered us over to his sleeping quarters where he put hot water and soap at our disposal. It was certainly some treat to get clean again. When we had finished our ablutions, we reported to him again. Morgan and I were assigned to the 110th Field Ambulance and Cook to the 108th. The Colonel then took the trouble to explain the maps of the front line in that region to us in detail and then for the first time we were apprised of the fact that the battle of Cambrai was on and that we were to go right into it.

The scenes along the road as we drove toward the front in the little Ford ambulance are beyond description. Driving through one devastated village after another, we saw war in all its glory and all its horror. The passable roads were jammed with ammunition wagons, ambulances, motorcycles, artillery moving forward, troops going in both directions, those going toward the rear, tired and covered with mud, those going in the opposite direction, happy, carefree, with shining rifles at their sides. We passed a cage of German prisoners who hardly liked the way the shells from their own guns were dropping near them. Cook was let off at the "slag heap" near a filled in canal and Morgan and I were landed at "Windy Corner," more properly called Hermies. From there Morgan was sent to Demicourt, behind which was one of our batteries which the Hun shelled continuously.

At this walking wounded station I first became acquainted with the British officer. For a day or so we were huddled together in a dugout which boasted of a single room, six by eight feet, in which we sat all day and sometimes all night when we were not on duty above. There was a colonel, a captain—and me. They didn't know how to open up and neither did I. For the greater part of two days I was as silent as a clam. Then they began to thaw a little and finally came to the conclusion that perhaps I was worth while talking to. Of course I couldn't understand their attitude—no American can—until I got to know them better. I thought it was the Englishman's usual aloofness, perhaps condescension but I soon found out that the reason an Englishman is hard to know is because he doesn't make up to strangers readily—in fact, is a rather a bashful animal.

We stayed up in that dugout quite a few days and then news came that we were to go back to a rest area. I looked forward to it with pleasure. My ear drums were sore and I was almost stone deaf from the vibrations due to continuous heavy shell fire. Moreover, I was beginning to feel the need of a bath. For a week I hadn't had my clothes off and my bathing had con-

sisted in running a sponge over my face and then scraping it with a dull razor. My hands once in a while came in contact with water too.

It is surprising how one can adapt himself to conditions entirely foreign to his usual life and get down to



2. French Engineers building new roads through a war-torn town.

the instincts of the primitive man. Up here I saw all kinds and sorts of wounds which I had to take care of with the nonchalance of a general practitioner. I learned to like the smell and taste of bully beef. I forgot what a napkin looked like and used the seat of my trousers for greasy fingers with discretion. I found that a few blankets on the soft damp earth, way beneath the ground, were more comfortable than the finest room in the best hotel if one is tired enough to sleep even when the roaring and booming of shells serenades him to sleep.

We worked our way out of the line the last few days of November, going through Bapaume and Arras to a rest area. However, our rest was short-lived, for within twenty-four hours peremptory orders came in to hike to the front again. The reason for this move no one knew at the time and it was not until the following day that, being one of an advance party, I found out that the Germans had started a counter-offensive and had regained most of the ground that we had so gloriously won. It was heart-rending to think of it. And to my mind no more distressing sight could have been seen than the retreating troops along the Bapaume-Cambrai road. But it takes a lot to down a British Tommy and the men who were going to the front were as cheerful as usual, although there was a more determined look on their faces. In fact, in all the time I was with the British I seldom saw an unsmiling face, even when the men were cold, hungry and weary. The officers were as good as their men and stood their hardships in a way that would bring cheer to the heart of a misanthrope, neurasthenic and hypochondriac combined.

We stopped overnight in the same draughty Nissen huts that we had occupied two days before. The mud was a foot deep and stuck to our boots like glue but my faithful Batman (servant we would call him in America but he was far more than that) managed to get them into shape again somehow. To make matters worse the thermometer was dropping rapidly to zero. I had not had my clothes off for many a night and even if I didn't have "cooties," I was so itchy that I had to get into my pajamas with the result that I awoke the next morning with a fearful cold. However, such a trifle couldn't stop the ambulance and so in the course of the next two days, we found ourselves at Moislans. About nine o'clock that night, Robinson, a thin, young Cleveland, who insisted on freezing in a thin serge American uniform and summer underwear, was ordered to report to a battalion at once; Captain Christie, a Scotchman and Morgan, who had come with me and who I

regret to say was killed in April, 1918, were ordered out with a stretcher bearing party; and Captain Crosbie, one of the finest Irish gentlemen I have ever met, and I were ordered to report to a Main Dressing Station at Fins the next day. Only the Colonel and the Quartermaster, Lieut. Parnell, were to remain at Moislans, with a handful of men.

The next noon found Crosbie and I holding down the job at Fins with a number of other medical officers from other ambulances. Here I found a great many Americans, most of them men new at the game—men who had had no previous military experience at home. I am glad to say that without exception they made good and if any fault were to be found it was the result of inexperience in the "etiquette" of the game. One finds that the English medical officer is born and bred a gentleman, while many of our men were self-made men who had practiced in small communities where the English language is regularly murdered. It would have done your heart good to see these green men go in to the line for the first time with smiles on their faces and with not one thought for their personal safety. Sometimes they would not show up at the dressing station for days. When they did come in, you could see from their careworn faces that they had not had a wink of sleep since they left.

Crosbie and I were assigned to a fine officers' mess with a charming set of fellows who did their best to make me feel comfortable. All day and all night the boche had been shelling an ammunition dump across the way with enough inaccuracy to make us uncomfortable. One didn't mind so much when a shell whizzed by when he was eating a plate of hot soup but it was at least impolite to send them over our shack when we were in the midst of a peaceable bridge game. I lost many a hand because a screaming noise rent the air just when I should have played the right card out of the dummy hand. I am sure I was never particularly afraid of boche shells but I never got over the habit of ducking my head. Everyone ducks.

My partner and I were first put in charge of the gas ward which meant that we took care of all patients who came back from the line who said they had been gassed. The work wasn't very arduous but as we were on twenty-four hour duty we had to stick round. The men were stripped, given a change of clothing (if we had it), a cigarette which they invariably stuck behind dirty ears, an inhalation of salts of ammonia and an



3. A Good Billet.

alkaline solution to bathe the burned parts. Then they were put to bed until they could be further evacuated. What they needed most was rest. Crosbie and I had so little to do that we stuck round a coal fire most of the time writing letters home and swapping stories un-

til we knew each other's histories from the time we were born. In order to be on duty and incidentally to keep warm, we slept in the gas ward until we were moved to a surgical hut.

I never knew how many kinds of a specialist I could become until I went into surgical work up here. You



4. A Camouflaged Shelter.

can imagine the conditions under which we worked when I tell you that it was so cold that we had to work in our overcoats, especially at night, and our surgical equipment consisted of a scalpel, a mouse tooth forceps, a probe and a pair of scissors. All gauze and cotton used was sterilized and clean and we learned to keep our dirty hands off of it. Our chief work was in seeing that patients were in a fit condition to be transported to a C. C. S. (Casualty Clearing Station) which corresponds to our evacuation hospital.

Most of our casualties were brought in from the line but we had a number from nearby places as the Hun flew his aeroplanes over us all the time. He was mean enough to come over about five in the morning when a man was in the midst of his beauty sleep. The other officers used to laugh at me because I never heard them at that time—I was too tired to wake up. One morning a bomb was dropped a few hundred feet away and caught a party of Pioneers. A number of them were killed and quite a few who were fearfully wounded. I cannot begin to describe the various kinds of wounds but I do remember one man who had the top of his head blown off and another who had the entire left side of his chest ripped away so that you could see his beating heart. He died before he reached the C. C. S.

One might ask if the scenes one sees are not terribly distressing. They would be if one were not so occupied or if he allowed his imagination to run loose. One can get used to anything and although the first time one sees men ripped to pieces, his heart goes down in his boots, the time soon comes when he takes it as a matter of course, only hoping that it won't happen to him. When it does happen to him, what then? That is one of the marvels of war. Not a whimper, not a cry, not a sign that indicates pain. The Tommy (and I am happy to say that the same thing holds true of the American doughboy and the French poilu) is such a cheerful cuss that the glory of being wounded in battle means nothing to him. To get a real "Blighty" in a part that isn't dangerous is what every British Tommy prays for and I often prayed for it too. To explain this glorious fortitude, one must analyze the psychology of war. No one has ever been able to explain why the common civilian who would ordinarily run away from danger makes the bravest soldier. Ask the soldier himself and he cannot explain it.

We left the line at the end of ten days which will

ever be memorable to me chiefly on account of the courteous way I had been treated by the officers I met. We reported back at Moislans where we joined up with the ambulance again. When we moved out the following day, we were shy both Robinson and Morgan so that I was the only American. Our travels took us back to a rest area half way to Amiens which we reached a few days before Christmas. One might have been comfortable here in the summer time but the little village could only boast of a few decayed barns and numerous one-story houses that had all the luxuries except heat, light, water and the usual things one is used to. The people in the town were rationed on coal and wood so that we couldn't buy or steal any. To increase our discomfort a blizzard struck us so that all our ambulances and wagons were stuck on the roads half way from nowhere. Bully beef and hardtack tasted mighty good those days. Here again I was made to feel the overwhelming kindness of my brother officers. Good old Christie had been the billeting officer and had assigned us to our quarters. My room was most luxurious—a half-clean bed with things that resembled sheets upon it, a stove in which coal might be burned and lace curtains at the windows. I found him in a room half the size which one managed to find by going through a stable and which had all the perfumes appertaining thereto. I had even a better billet than the commanding officer and when I remonstrated I was made to feel that I was their guest. (American officers, please take notice.)

We would have had a most glorious Christmas if we had not received orders to be on the move the following morning. As it was we had to pack up and get out to make room for someone else. The ambulance arose at four in the morning and were on their way before daybreak while I was left behind in charge of the horse transport. After two days I caught up with the ambulance at Corbie, a little town about eighteen miles from Amiens where we were to stay until New Year's.

The weather had become crisp and the sun shone gloriously. Our hospital had been an old bicycle factory, very damp and airy and lacking stoves. Of course there were no beds but we managed to commandeer enough ticks and dry straw to give every man a good berth on the floor. Then I set about making stoves. The stove itself was a converted five-gallon oil drum and the piping was made out of opened up biscuit tins, rolled into cylinder form. The men were quartered on the top floor of the building, while the officers occupied a farmhouse a short distance away in which we were very comfortable. I had a real bed to sleep in. The mornings were so freezing cold that I performed my ablutions in bed. Faithful Jimmy, my batman, would bring me my hot shaving water and by dint of balancing myself on one elbow I managed very well. One of us had to be on duty in the hospital every other night. It would have been alright if I had had enough codein to go round and stop all the barking. All the forty men on that floor had a tickling in the throat and no chorus of a comic opera could have made more noise.

While we were settling down here for a long stay, lazing away the day and whiling away the nights in comfortable cafes where champagne was almost as cheap as water, we began to hear rumors that we were to take over from the French in front of St. Quentin. But it was only when our move orders came to go further south that we were sure of it. I was much disappointed at that particular time for I was learning to

drill the Tommies so that I could appear in a divisional parade in which I was to be the only American. The colonel had arranged it for me.

Early one morning we started out for Rosieres where we spent the night in a typical uncomfortable French mansion from which the Germans had removed all the furniture at an earlier date. I cannot remember a colder place. No one could get any wood or coal so that we had to hug ourselves to keep warm. I heaved



5. A Lonely House. All that Remains of a Prosperous Town.

a sigh of relief when we left and certainly hoped when we reached the next place that something would turn up to show that our luck had changed. We landed at Bethincourt, a short distance from Nesle, late one afternoon after a sixteen-mile hike through a country that was exceedingly interesting; for the Boche had left it but a year or so before and the fields bordering the roadsides were filled with broken-down trenches over which dank weeds had grown and between them were miles and miles of staked out, rusty barb wire. Often we stopped beside an old Hun dugout which with the usual American curiosity I had to explore.

Our stay at Bethincourt was short lived. Apparently we were needed nearer the front so the following day we were on the move again toward a little village called Dury, a short distance in front of Ham. We took over a fairly large hospital from the French, who were trying to evacuate that part of the line as quickly as possible. The place was uncannily quiet after our experience of the past few months so that we were constantly looking for trouble. Silence sometimes gets on one's nerves especially when he is only a few miles from the front line. During the day we would hear the boom of the small guns some distance away and at night we would hear the whirr of German aeroplanes who were on their way to bomb Ham, in which they soon discovered that divisional headquarters was located. I don't know whether we were more afraid of the bombs or the shells of our own archies. Anyway I know the noise was terrific and gruesome.

Our ambulance was assigned to take care of all the skin work of the division. We knew there were a few cases of scabies and impetigo in the division but the following morning the line of cases in front of the hospital was so long that we began to feel that every man was diseased. Naturally the little hospital of seventy-five beds (on the floor) couldn't hold them all so we had to make use of the nearby barns, most of which were not fit for French pigs to live in and that's going some. Later we moved all the "skins" over to a large monastery at Ham where they had shower baths, a Foden sterilizer and German bombs. I think the latter got them well more quickly than anything else.

In this tiny little hamlet which the Huns had left almost unmolested were a number of French civilians who were cheery and kind and seemed to like the Eng-

lish immensely. Our ambulance was very popular as we had to take care of the civil population. One noticed a preponderance of old women and children. Men of any age were very scarce. In this place I learned what an awful life a general practitioner in a small town must lead. I examined hearts, dressed sore feet, treated bronchitis and pulled teeth. In the latter I became very proficient, due mainly to the instrument maker marking every forceps in such a way that I couldn't use the wrong one if I tried. I came near being an obstetrician once but the woman had her baby in the good old-fashioned Indian way. She went to well in the morning to draw a pail of water. She went again late in the afternoon. Meanwhile she had her baby.

I was quartered with the quartermaster, Lt. Parnell, who was as fine a man as one would wish to see. His chief cuss word was "bloody." Parnell and I discussed the war from beginning to end and wondered whether we would ever see home again. These discussions usually took place after we got between the damp sheets o' nights and were interspersed by the constant pitter patter of the rats who were playing a game of their own in the room above us. I told him as I had often told the colonel that I wouldn't be satisfied until I had had my tour of the trenches. I was promised a berth in the A. D. S. (Advanced Dressing Station) but nothing came of it. But I was repaid in another way. For my orders came at last to report to the Second Irish Rifles to take the place of a medical officer who was going off on leave.

I may have thought I had had a good time thus far. But nothing equaled the enjoyment I had while with this battalion. Everyone considered me his guest and the officers outdid themselves to show me all the fun of the front line. Here let me say that this organization gave a good account of itself on March 21st but was soon shot to pieces. Almost every officer I knew was killed, wounded or taken prisoner. What the fate of the medical officer was I do not know definitely but I heard later that he was taken prisoner.

The battalion was stationed at Fleuquies near Roupuy which was but a short distance away from St. Quentin. We were near enough to see the flat roof of the Cathedral and we were sure that the boche could see us. It made a fine observation post and what made it all the sadder was that the French would never shell the town and didn't want us to do so. There were about 75,000 French civilians in the town and the French didn't know what would happen to them if we began to inflict damage.

Our first few days were very quiet. After sick call early in the morning I had little to do and so I spent my time watching the men at drill and becoming familiar with the workings of the Lewis machine gun, the rifle and the pistol. One day we went out on pistol practice. We were aiming at a bottle perched on a stake. The other officers were unable to hit it. My turn came. I closed my eyes, brought up my pistol at arm's length as we are taught to do, pulled the trigger. A gust of wind struck the bottle at the same time and it fell, shattered in a thousand pieces. I received a great deal of credit for my marksmanship.

At last the long looked for orders came for our battalion to take over the line. We marched through Grand Seracourt and in the blackness of early night found ourselves in a railroad cutting alongside of which were a number of comfortable dugouts electrically lighted which the French had built. About twenty letters from home reached me up there which I luxuriously read forty feet below ground while I reclined on my downy couch made of a piece of canvas stretched

on four wooden uprights. Early in the morning of the following day I went up to my R. A. P. (Regimental Aid Post) in the front line trenches where I remained until the battalion came up in the evening. Here I met the cheery officer from whom I was to take over with whom I had my usual argument about the



6. Solid Comfort.

rum ration which I maintained wasn't necessary for any army and which he as stoutly maintained was necessary. We never did finish the argument.

As I call to mind all the pleasant experiences of those few short weeks in the line, I find it very hard to confine myself to the limits of a few pages. During the days, most of which were sunshiny, I was quite idle as there was very little "strafeing" on either side, but the fun would commence at night when the sky would be lighted up with Very lights and the air would be filled with the shriek of cannon and the tat-tat of the machine gun. Sometimes there would be an ominous silence, punctuated by the sharp whizz of a rifle bullet. I had very few casualties to attend to as the men kept fairly well under cover. Our Aid Post was about half a mile from battalion headquarters. I had to go there every day and as the communication trench was filled with mud up to one's knees I preferred walking alongside of it feeling fairly confident that any sniper who saw me would have a long distance shot that would be far from accurate. I kept up this confident feeling until one morning when as I was rounding the corner of the road, a well aimed bullet came near enough to my ear for me to feel the warmth of it. That same day, two of my men were hit while walking on that road so that an order went forth for everyone to use the trench.

As there were not enough quarters for officers, I had one of the company commanders bunk with me. We decided to sleep in the "elephant" above the earth rather than down in the dugout which leaked so fearfully that one was liable to be drowned in his bed. The wire bunks were fairly comfortable but we suffered quite a little because it was impossible to have a fire

other than the one our servants cooked on and which all the servants monopolized. We never took our clothes off and the only time we were warm was when we crept inside the blankets. There were other times while we were walking in the trenches when we sweated good and plenty but it was a cold, clammy sweat. My companion, Lieut. Stewart, who I believed was killed later on, and I would sit on either side of our little table and swap stories until the time came for him to go in the trenches and as he knew that I was up there to see all I could, he invariably took me along. It was glorious fun and as long as I followed along like a little dog, I was never afraid. But I must admit that the few times I ventured out alone, I looked round the corners pretty carefully before I put my best foot forward and when I came to one part of the trench which had fallen in and exposed one from the waist up, I became the best little crawler you ever saw. One doesn't need the experience of war to know how to crawl. He remembers it very well from babyhood.

One night I became lost in the front line. It happened this way. Lieut. Stewart had "taken over" with his men and wasn't coming back. He had left a jar of rum at the Aid Post. I knew he and his men would be wanting it and so, calling my orderly, we proceeded up the communication trench to "B" headquarters. The night was horribly dark but I thought I had my bearings. There were two turns at one point and of course we took the wrong one. We had gone about two hundred yards when I realized my mistake. I called to my orderly who was one traverse ahead of me, to stop. A cold sweat trickled down my back for I didn't know whether we had proceeded toward the German lines or back toward our own. If I had been alone I would never have tried to get out until morning but my faithful man had had more experience than I had and he managed to get us out. When I got up to headquarters I felt that I would be perfectly content to stay there until the end of the war but my duty called me back to the Aid Post.

On off days Morgan and I would visit each other. He was with a battalion immediately on my right. I don't believe that I ever knew a man more loved than this American was. A graduate of Leland Stanford and Johns Hopkins Universities, a crack tennis player, a manly, stalwart man with a cheery, open face, a man who was always willing to put himself out for others with never a thought for himself, a man who had everything in this life to live for and was sure to have become a successful doctor, played the game in the way that all of would wish to play it and then on the 14th of April, 1918, his luck forsook him and he went "West" to join that glorious band of comrades whom we shall see no more until we get to the "Great Beyond." Everyone predicted that Morgan would cover himself with glory when the opportunity came and sad as it is to think what happened to this poor boy, there wasn't a one of us who when he heard it, did not envy the glory that his memory will ever have. My last glimpse of Morgan was when he came over to my post one Sunday afternoon to take tea with me. All we could talk of was the sad lot of the men who had had to stay at the base hospital.

Among the many things I learned while up in the front line was the difference between the sounds of the German guns and aeroplanes and ours. I also learned the feel of hand grenades and indulged in the playful pastime of viewing trench mortars, Lewis guns and rifles. The one thing I did not learn was medicine for our casualties as I said were very few and hardly a man reported sick. The men seem to have a certain code

of ethics for the front line and one of them is that you must never desert your comrades unless absolutely necessary. The only way that I would ever get a sick man to report was to have his officer lug him down to the Aid Post by the back of his collar. Many a time I saw a man at his uncomfortable post who had every illness on the calendar back in the rest area when he tried to get out of the drudgery of digging trenches.

We were called out of the line all too soon to suit me for I realized that I would never get into it again. Our hike took us back to the railroad siding where we again remained over night. The next morning the regular medical officer reported and so I trudged a weary way to the ambulance after saying a sad good-bye to my dear companions. Never shall I see their faces again for later I received a letter from the Padre of the battalion who told me how fearfully they were mauled on the 21st of March and that almost everyone I knew was killed, seriously injured or taken prisoner.

I never knew how much an effect these few weeks had had upon me until the next day when I found myself completely exhausted. The mental strain was nothing but the continual dampness had got into my bones and I felt as though they would crack. That same afternoon two letters reached me from the base, saying that if I was willing to come back an opportunity was there for me to do my special work. I thought of my family at home, decided that I had been a lucky dog thus far and that the least I could do for them was to get out of danger so I immediately wrote that I would come and a few days later, my orders arrived just when I was thinking how nice it would be if the boche would start their offensive, which we had been expecting. Again Providence must have been with me for the Lord only knows where I would be to-day if I had stayed up there a few weeks longer.

I did not remain with the base hospital very long for I found that I was restless after my exciting experiences and so I requested a transfer to the American Army, hoping that I would get into field service. Instead I was transferred to the Bordeaux region, about as far from the front as I could get. I wish it had been otherwise. No one could have been more cordially treated than I was there but the only life in the army that is worth while from the soldier's point of view is the life on the front line.

At the beginning of this paper I said, "God bless the English." In closing I say it again. I have never seen an American who had been intimately associated with them who did not feel the same way. They are the best pals in the world and their gameness is only too well known. We have a habit of bragging about the French, who are fine fellows, too, but there is a certain restraint in our enthusiasm about the English which does not allow us to give them all the credit that is due them. I am sure that an Englishman is more than willing to meet an American half way. Give him half a chance to show his friendly feelings toward us and I am sure that we shall be more than satisfied with the end result.

2178 Broadway.

The Carrel treatment applied to articular infections treated by arthrotomy is useless, if not dangerous, because precious time is lost in trying to obtain a result which only more rational treatment can give. Arthrotomy is only indicated in cases where there is no retained projectile or where a retained projectile is easily accessible; but even then it is better to open up the tract by a classic incision. Arthrotomy when done should be associated with synovectomy.

THE TUBERCULOUS CHILD.

J. EPSTEIN, M.D.,

The primitive man probably knew of the disease now known as tuberculosis. From the twilight of recorded history to the present age, consumption has been the curse of mankind. With the dawn of civilization the disease became more known and more dreaded. The more men became civilized and the more they congregated into communities, the more phthisis became prevalent. The etiology, pathology, symptoms and signs of tuberculosis were for many centuries in a state of speculative confusion. It is only during the latter part of the eighteenth and the beginning of the nineteenth centuries that a definite advance was made toward the modern conception of the cause, nature and infectivity of tuberculosis. Many illustrious medical men have for years contributed to the present knowledge of this disease, but its greatest scientific and experimental achievements came during the end of the nineteenth century.

Consumption is the most widespread disease, transcending all other maladies in the loss of life and health. It is an enormous financial cost to the society of civilized men and a great cause of poverty and misery the world over. No race or age is exempt from tuberculosis. It prevails all over the globe in all latitudes, altitudes and climates, though it is more frequent in temperate zones and lowlands. Domesticated animals and birds as well as men are attacked by tuberculosis.

This dreaded disease is caused by a minute organism, the bacillus tuberculosis. There are four different types of this organism, the human, the bovine, the avian and the reptilian. Men are affected by the human type, occasionally by the bovine, but very rarely by the avian or reptilian types. The tubercle bacilli invade the body through the respiratory tract by inhalation, through the intestines by ingestion or through the skin by inoculation. The body reacts to the injurious effects of the tubercle bacilli by the formation in the tissues of small nodules. These primary pathologic units are known as tubercles. They are so characteristic of this disease that the disease itself and the organism causing it have derived their names from them. The fate of the tubercle decides the fate of the patient. The tubercles may become generalized and cause a rapid, fatal termination, or they may undergo causation and necrosis leading to a chronic debilitating illness, or the tubercles remain localized and are healed by connective tissue formation and calcification.

Infancy and childhood are the periods of life most susceptible to tuberculosis. In early years tuberculosis is more frequent than in adult life. An infant is an integral part of the life and health of its parents. A child born of tuberculous parents may come to this world tuberculous or carry within it the tuberculous diathesis, that is, a ready susceptibility of the tissues and organs to this disease. An infant may be healthy at birth but soon becomes infected by its tuberculous parents or attendants. The intimate and constant association of children with adults enhances the chances for infection. The habit of some children of putting dirt into their mouths is an occasional source of tuberculous infection. Milk from tuberculous cows, or otherwise infected by the tuberculous organisms, are occasionally given to children causing tuberculosis of the intestines and the mesenteric glands. The frequent infections of the upper respiratory tract in children, the exanthematous diseases, whooping cough,

and influenza prepare a ready soil for tuberculosis. The lymphatic glands in early life are readily infected by tuberculosis, especially the cervical, thoracic and mesenteric groups. Tuberculosis of the bones and joints is mainly a disease of childhood.

The great frequency of tuberculosis in children with its tendency to spread and become generalized makes an early diagnosis imperative. Unfortunately, the child cannot aid the physician by its subjective symptoms. The feeling of weariness, debility and weakness, and the various aches and pains of which the adult consumptive usually complains are not told by the infant or child. At this early age a diagnosis of tuberculosis must chiefly be made on objective symptoms without waiting for physical signs. Gross pathologic changes which are evident on physical examination indicate that the tuberculous process has extensively involved some vital organ or system of the body which probably made the condition beyond medical succor. The proper time to diagnose and treat tuberculosis in the young is in its incipient or pretuberculous stage. Since symptoms must guide to a diagnosis of consumption in early life, a knowledge of their occurrence and significance is of great importance.

Loss of Weight.—This is an almost constant symptom of tuberculosis in children. The child may appear well, get the proper food and have good digestion and yet lose weight. There is a wasting of the body, it consumes itself, it has consumption. A gradual loss of weight without evident reason means tuberculosis in many cases.

Fever.—The thermogenic center in infancy and childhood is a very sensitive mechanism. A rise in temperature is the first evidence of some abnormal function of the body. A chronic obscure fever is a reliable index to some chronic infection or intoxication. During childhood, a persistent daily rise in temperature with no apparent reason points to tuberculosis.

Pulse.—The pulse rate in early life is greater than in the adult. A persistently rapid pulse above the normal for the age means some aberrant function of the body. When cardiac disease, hyperthyroidism, anemia, or chronic infection can be excluded, tuberculosis should be thought of.

Anemia.—When there is no history of loss of blood and no evident disease of the blood itself or the hematopoietic system, a pale child should be looked upon with suspicion of possible tuberculosis. A persistent anemia with no apparent etiologic reason may mean tuberculosis.

Cough.—This is a signal from the respiratory tract that something there is amiss. Cough in a child may be due to hypertrophic tonsils and adenoids, enlarged thymus, enlarged tracheobronchial glands, bronchitis, bronchiectasis, asthma, pleuritic adhesions, whooping cough with or without a whoop, chronic influenza, chronic heart disease, nervous or reflex irritations and tuberculosis. It is evident that cough is only a symptom of some respiratory disease. But when the symptom is associated with other evidence of tuberculosis the diagnosis is almost certain.

Hemoptysis.—Blood spitting, which is a frequent symptom of tuberculosis in the adult is uncommon in the child. When it does occur; the source of the bleeding should be investigated. Bleeding from the gums, from the nasopharynx, or from the bronchial tubes in bronchitis, bronchiectasis and asthma, or from pulmonary abscess and gangrene may occur and cause blood spitting. Severe anemia, leukemia, purpura,

hemophilia, and scurvy may cause bleeding from the mouth.

Night Sweats.—Night sweats or sleep sweats are not of the same significance in the child as in the adult. Rachitic and debilitated children sweat a great deal when asleep. But in conjunction with other evidence of tuberculosis it tends to a positive diagnosis.

The physical signs of tuberculosis vary according to the underlying pathological changes in the pleuro-pulmonary system. In the physical investigations of the chest cavity, there may be abnormalities of all kinds and degrees. The contour and shape of the chest wall, the tactile and vocal fremitus, the resonant vibrations, and the transmission of the respiratory sound along the broncho-pulmonary system may all show some deviation from the normal. Lesions in the anterior lung, marked substernal and interscapular dullness, and the D'Espine sign favor a diagnosis of tuberculosis. A positive diagnosis should be based on a combination of symptoms or the correlation of symptoms and signs, aided when necessary, by a history of tuberculosis in the family, the tuberculin test, sputum examination, and x-ray of the chest.

Prognosis — Prophylaxis and Treatment.—The younger the child the worse the prognosis. Tuberculosis of the meninges, tuberculous pneumonia, and intestinal tuberculosis, all give a gloomy prognosis. A favorable outcome in the other types of tuberculosis depends on the defensive resistance of the little patient, the health of the parents, the economic conditions and the surroundings. In tuberculosis prophylaxis is better than treatment. Prevention is a hundred per cent cure. A child should not be allowed in contact with a consumptive adult or child. Kissing a child on the mouth may transmit tuberculosis. A consumptive mother must not nurse her infant. Milk from a doubtful source should be pasteurized or boiled before it is given to a child. Minor infections of the respiratory tract must receive careful attention. Treatment of tuberculosis consists mainly in increasing the strength of the body by good food, fresh air, and plenty of sunshine, so that it may ward off or arrest the disease. Creosote, arsenic, strychnine, quinine, cod liver oil, and iron are helpful. The serums and vaccines are still on probation.

222 East Broadway.

THE CHEMICAL TREATMENT OF COMMUNITY WATER SUPPLIES.

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Quite recently the knowledge that their drinking water had been and was being treated by chemical reagents came with such a surprise to the people of a community within a thickly settled area that indignation was freely expressed. One resident, possessed of a militant disposition, counseled legal proceedings that would restrain the company from pursuing such a method.

On the supposition that such a proceeding might be successful the result would have been the delivery of water to the community that differed in no material respect from dilute sewage. The watershed itself is situated in a thickly peopled region, is not free from possible defilement and for several years it has not kept in a reasonably clear condition. The operating company is the subsidiary of a holding company which is interested chiefly in marketing the materials it manufactures. The subsidiary company has played politics in the past to the extent that practically it is at the end of its resources.

The fact that the death rate of the community is be-

low the average death rate of communities east of the Mississippi River furnishes all the evidence necessary to show that the water delivered to households is good and wholesome. This fact speaks louder and more effectively than would any details and certificates of chemical analysis.

Chemical treatment for the purification of municipal water supply is no new feature, nor is it a fad. Where simple filtration of the water will not remove the elements of pollution, chemical treatment is a necessity. Chemical treatment of drinking water has been practiced in China for more than two thousand years; it has been a feature of water purification in Europe for a long period of time; it has been practiced in this country for many years. In some cases it is merely for the purpose of "softening" hard water; in others, for removing sediment and suspended organic matter; in still others the sole purpose is the sterilization of the water containing pathogenic micro-organisms, in order to make fit for domestic use.

The value of the chemical treatment of water reaches beyond the questions pertaining to public health; it is an economic matter of the greatest importance. Thus the Koyl method of purification of the water supplied to the tanks of a western railroad cut down the average yearly repair expense from about \$3,800 to \$1,200 per locomotive. Twelve years ago, when Mr. Koyl's estimates of the saving effected by purified water were published, it was claimed that his figures were absurdly high; the experience of a dozen years has shown that they were not high enough. And when the question of water purification in the light of public health is concerned, its value is incalculable, it can be measured only in terms of death rate.

In a large part of the United States filtration alone is all that is necessary for the delivery of wholesome water; in many instances even this process is unnecessary. If the water comes from a watershed free from alluvium and other loose matter, filtration is not apt to be essential, though usually it is desirable. Sand filtration is almost always beneficial. It removes not only the visible suspended matter; it removes most of the organic matter in what might be termed a condition of semi-solution—that is, matter which has little or no effect on the transparency of the water.

Filtration under pressure is pretty effective in sterilizing water so far as micro-organisms are concerned. It is safe to assume, however, that filtration is not absolute; it is not certain at all times; it is not certain with all kinds of micro-organisms; it is pretty safe to say that the spores of many species of micro-organisms will pass freely through any sand filter. Chemical treatment of the water in such cases therefore is necessary as a safeguard.

The watershed noted is not fortunately situated. The streams draining it are small and sluggish. To all appearances the underground percolating water surpasses the surface water in volume. The water carries but little earthly sediment excepting the period following heavy rains. The organic matter in solution, semi-solution and suspension consists chiefly of vegetable matter and the mineral salts contained therein. The micro-organisms present are of the kind usually occurring in water containing a considerable proportion of organic matter—algae, infusoria and various forms of bacteria. The first two do not present problems difficult of disposition; for the greater part, they are removed in the process of clarification and filtration.

The first step in the chemical treatment of the water of the character noted is clarification. The reagent

most commonly used therefore is alum, or else aluminum sulphate. Alum has been used for the purpose for twenty centuries. The fact that the explanation of the reaction is not with certainty known makes no difference so far as results are concerned. The important fact is the rapid precipitation of suspended and semi-soluble matter. An excess of alum leaves uncombined alum in the water; a deficiency leaves suspended organic matter in the water. The water from such rivers as the Missouri or the Sacramento requires from six to ten grains per gallon; that of the water noted requires not more than one or two grains; and even this small proportion precipitates an amazing volume of sludge, which is deposited in the settling tank.

Sterilization is the feature which determines whether or not the water is fit for consumption. That drinking water may contain many species of micro-organisms in large numbers and still be harmless goes without saying. But, if colon bacilli are found in as low a proportion as one of two colonies per cubic centimeter, it is reasonable to infer that the water contains fecal matter. The sterilization of the water is then imperative; for if fecal matter is present there is the greatest danger of contamination by the germs of various enteric diseases.

Distillation, or boiling the water even, is out of the question in the case of municipal or community supply; chemical sterilization offers the most feasible method of treatment, and the reagent used by preference should be an oxidizer. Potassium permanganate, calcium dioxide, hydrogen dioxide, ozone, bromine and chlorine have been used for the purpose. One by one, however, the various reagents have dropped off, leaving two members of the list—ozone and chlorine. The former has great possibilities yet unrealized; the latter is not only dependable; it is certain.

No question about the chemical activity of ozone exists. Two difficult problems must be solved before its use can become effective. The production of ozone requires complicated mechanical devices; it is likewise very expensive. Perhaps cheap hydro-electricity may overcome this obstacle. So far, it has not been feasible to ozonize the air completely; as a matter of fact, it has been found expedient to use air containing about forty per cent of ozonized oxygen. The great difficulty hitherto has been to effect a thorough mixing so that the ozone shall come in contact with every particle of the substance to be removed from the water. When Koyl undertook the treatment of the water required for making steam he used the same reagents with which others had failed. Koyl's success was due to the fact that he knew how to mix his reagents, with the water treated. They were not properly mixed, he held, until every particle of the substance to be removed came in contact with a proper measure of the reagent. Now the thorough mixture of two liquids is not an easy matter; the mixture of a gas with water where quantities are handled in thousands of gallons per minute is a most difficult matter. Incidentally the law of diffusion of a gas within a liquid does not apply to the diffusion of a gas in a liquid which does not dissolve it. One thing, however, is certain: the purification of water by ozone's volume of water it diffuses itself with but very little physical mixing. Liquid chlorine prepared for the purpose is supplied in tanks. It feeds itself by its own pressure, and the delivery is regulated by a very simple device.

From the nature of the case it cannot get into the water in a proportion to be deleterious unless by design. In such a case both the taste and the odor of

the surcharged water is a safeguard against danger. The chief danger arises from an accidental stoppage of the feeding device, and possible danger from this source is a grave one.

Occasionally an unpleasant taste is imparted to chlorine treated water. This may be due to free chlorine; or it may be due to organic matter unoxidized. The same trouble is likely to occur when ozone is used as a sterilizer. In either case the feelings rather than the health are harmed.

Ultra-violet rays are also successfully used in the sterilization of drinking water. A mercury-vapor lamp is inclosed in a tube of fused rock crystal, and the tube is placed in a box, four sides of which are also of rock crystal. Glass will not answer the purpose. The whole apparatus is placed in a chamber traversed by the water. Properly arranged baffles bring every part of the water to the position where the light penetrates it.

According to Parkes and Kenwood the pathogenic bacilli likely to cause disease are killed by a very short exposure—ten to twenty seconds. The method is effective so far as destroying the life of the micro-organisms is concerned. It leaves the organic matter unoxidized and apparently it does not affect any toxins that may be present. The process is successful in clear water; it fails if the water is turbid.

In the thickly peopled parts of the United States the diseases most frequently resulting from contaminated water are diarrhoea and typhoid. In several instances the pollution of a water supply by the excreta of a typhoid patient resulted in a scourge of typhoid in which the resulting deaths were numbered by hundreds. In Europe and Africa, pollution of water supplies by cholera bacilli has resulted in deaths that numbered millions. In Asia the cholera scourge was known to occur at twelve-year intervals but the cause therefore did not become known for a century. Then it was discovered that the epidemic stage of the disease followed about a year after a pilgrimage of several million people to the celebration of a religious festival at Hardwar, a city of northern India. Polluted water did the rest.

Doubtless the idea of chemicals in drinking water is repugnant at first thought. But the fecal matter, the products of putrefaction, and the micro-organisms of disease are just as much chemical substances as are the chlorine and the alum which destroy them. Chlorine and alum do not produce fatal diseases; the micro-organisms of fecal and putrefying matter do produce them. Granted that it is a choice of two evils, chlorine and alum are less undesirable than infected fecal matter.

In the examination of water much stress is placed upon the presence of colon bacilli. As a matter of fact, under ordinary circumstances they are not harmful. Human intestines as well as the intestines of domestic animals are their normal breeding grounds. Moreover, weight for weight, the foodstuffs exposed for sale on the streets contain a million times as many colon bacilli as may be found in untreated drinking water. They are derived from the horse-dung content of wind-blown dust. The danger of typhoid infection from wind-blown dust has not been shown to be great; on the contrary, it seems to be very slight. Colon bacilli may be found in the water at the faucet even though the water may have been freed from them at the pumping station. When this occurs it is quite likely that somewhere below the pumping station the water has been infected by street dust.

But the presence of colon bacilli above the pumping station in colonies materially greater than two or three

per cubic centimeter is probably the surest indication of fecal contamination; and typhoid, as well as other enteric diseases, are always a possible result of such contamination. For this reason, the presence of the colon bacillus, which is easily determined, may properly be regarded as a danger signal. And when one considers that the death rate of a community in many instances is the measure of the potability of its water supply the freedom of the water from pathogenic micro-organisms and other disease-producing conditions becomes a matter of the highest importance. "Public health is a purchasable commodity and, within certain limits, a community can determine its own death rate."

Meteorological Laboratory.

HOW TO HANDLE THE NARCOTIC SITUATION.

SARA GRAHAM-MULHALL,

CHAIRMAN, SOCIAL WELFARE COMMITTEE, MAYOR'S COMMITTEE OF WOMEN
New York

Whichever way we turn, one factor will be found which will explain, more than any other, the reason for all this increase of human activity in an effort to stem the tide of the narcotic evil. The fact is that the public mind has awakened to the peril of drug addiction, and it is all-important that medical men should realize the urgent need of their assistance in this great cause.

First, as members of the medical profession, you are in the main the recognized exponents of the best thought and most worthy ideals, and, as such, the great mass of people who are less favored in education, have the right to look to you as the natural leaders in the solution of civic problems, moral, social and physical, and as guardians of the public weal. If the foregoing statements are true, the following assertions are justified. The narcotic situation as it confronts this nation to-day is due to your neglect, your aloofness, as members of your own profession choose to term it.

There is no purpose to criticize the attitude of the average physician, who is doubtless actuated by a determination to abstain from complicated political problems. These human sufferers, however, do not embody a political problem, but a human problem transcending any consideration for class or organization.

"To have guns without men behind them, dramatic events have helped us see, is inexcusable unpreparedness."

To have drug legislation and hospitals, without doctors to understand and care for these poor human derelicts, is criminal unpreparedness.

The testimony at the Whitney hearing showed conditions of vast and alarming extent as to addiction. This testimony came from Government officials and other people of unquestioned authority, verifying the stories of the addicts themselves who appeared. It is apparent from the testimony that there is no institution in this city to which narcotic addicts can go and secure any relief which is worthy of the name.

This absence of help is the real cause of the growth of the illegitimate and illicit traffic, as it forces those suffering to go to illicit dealers for relief which is denied them elsewhere. The Board of Inebriety and the hospitals have been shown by the testimony of the Whitney investigation to have accomplished nothing of value for the relief of this condition.

An editorial in *American Medicine* says: "At the

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present time we are groping in the dark." No, we are not groping in the dark. Dr. Bishop and others have conclusively shown that it is possible for the intelligent practitioner to treat narcotic addicts, with gratifying results in the majority of cases, purely on the basis of what is known of disease processes generally, for in their experience, with the disappearance of certain definite, understandable pathologic conditions, the so-called "habit" and "craving" passes away.

There is also a large field in the study of the best methods of after care, follow-up work, after the patient has been taken off the drug, all existing agencies to be utilized or, if necessary, enlarged to meet proper health nursing conditions.

The intensive use of existing facilities, in a co-ordinate way, under the stimulus which this committee might provide, would perhaps lead to important increases in the resources of New York for meeting the human needs which I have mentioned above.

Not only should the drug sufferer be treated, but all the influences, social as well as medical, that tend to create addiction, should be investigated. A scientific social study of conditions that make for drug addiction should be undertaken. Every hospital should be compelled to open a ward for the care and treatment of drug addiction; every physician should be fully informed on the subject of drug addiction; every medical student should be taught the habit-forming tendencies of such drugs as morphine, veronal, heroin, paregoric, cocaine.

The United States Government should prohibit absolutely and with no exceptions the manufacture, importation and sale of heroin, which besides being cruelly dangerous is also an unnecessary drug.

The United States Government should also assume control of the manufacture, importation, sale and prescription of all other habit-forming drugs; and no one should be allowed even to possess habit-forming drugs except under conditions prescribed and supervised by the national government and such governmental agencies or qualified physicians as it may delegate and license to act for it.

Instead of permitting persons who happen to possess a medical certificate to prescribe, give or administer habit-forming drugs to other human beings or to themselves, the government should license only such small number of physicians as upon investigation may be found necessary, and who are reasonably qualified to administer habit-forming drugs with judgment and safety.

The Commander-in-Chief of the United States Army, the President of the United States, should be urged to require army and navy officers to give drug addicts who are found among enlisted or conscripted men or among regular soldiers and sailors of long standing, all necessary isolation, treatment and rehabilitation, instead of following the present practice of first giving these unwilling victims of drug addiction dishonorable discharge and then sending them unprotected and helpless back to communities throughout the length and breadth of the land, which are not prepared to cure them but only to increase their helplessness.

Pending action by the national government, our New York State Legislature should centralize control and supervision, either in the State Board of Health, or in some other qualified responsible agency, over the prescription and sale of habit-forming drugs within this State.

We believe that the State Department of Health has at this moment an opportunity to establish such a leadership in the making of health policy for New York

State as it has never had before, or at least never utilized.

Enough copies of the recommendations and findings of the Whitney Legislative Investigating Committee should be printed so that the information may be sent to health officers, medical societies, leading physicians, editors, educators, and to principal army officers.

If there had been wider and wiser publicity, and the true facts concerning drug addiction had been determined, the present deplorable situation would not now exist.

As a final suggestion, may I emphasize the need for educating public opinion since this is of the utmost importance as tending to develop a sympathetic understanding of the great problem.

In conclusion, it is difficult to understand how any kindly disposed person can come in contact with those afflicted with drug addiction and not be filled with sympathy and commiseration for their burden of suffering. Can there be any finer or nobler work than to strive to lighten and remove this burden, not only for the sake of the individual sufferer, but also for the good of all society? What is needed is to build up freedom from slavery, to create self-esteem rather than break down the last remnant of self-respect by punishment.

It is easy to lose patience with many drug addicts, but who can comprehend or appreciate all that they undergo? Moreover, is it not the same with individuals suffering from any chronic malady?

If any one fact stands out more clearly than another in connection with this great problem, it is that tolerance, sympathetic kindness and patient intelligence are urgently needed, if we are ever to learn the true facts concerning this sinister disease and conquer it. Every agency, every force, and every influence that can help to these ends must be utilized and as one of the first and most important details, we must win the confidence of the sufferers and dissipate the all too prevalent idea that persecution and condemnation are all they have to expect. When we have accomplished this, and have made provision for some place or institution where addicts can go, and, without the fear of publicity or exploitation, get dependable scientific aid adapted to their individual needs, we shall have gone far toward removing this blight on humanity. It is our earnest hope and desire that the splendid work of your esteemed society may prove a potent factor in bringing about this consummation so devoutly to be wished.

The Blind Carry On.

"Don't call these men blind; just think of them as normal men who cannot see," is the appeal of Sir Arthur Pearson in reference to the men blinded in the war. This is the philosophy of the famous sightless British publisher, who has done such a magnificent work for the blind in founding St. Dunstan's in England, as revealed in the *Red Cross Magazine* for April, and is the one which every family of a blinded soldier should strive to reach.

The government is offering every opportunity to men disabled in battle to acquire the training through which they may return to a life of economic independence, but the moral backing of the family is absolutely necessary if the greatest degree of success is to be attained. With this end in view Red Cross workers have established a close relationship with all families of wounded men, supplying not only the friendly counsel, but the material necessities, enabling the family to carry on in the absence of the bread winner.

Already 600 men from St. Dunstan's in England have gone forth to economic independence, many of them finding work more remunerative than that in which they engaged before they had lost their sight. In the United States the blinded soldiers are trained at U. S. General Hospital No. 7, Roland Park, Baltimore.

Special Article

Influenza.

Two numbers of that most excellent journal, the *Practitioner*, of London, have been devoted to influenza. We are taking the liberty of reproducing here-with a few excerpts from the January and February issues.

The latest bacteriological investigations on this protean disease leave us with no definite information with regard to the actual specific organism concerned. It must accordingly be relegated to the class of infectious diseases comprising, oddly enough, those most commonly met with, to which Ovid's phrase, *causa latet, vis est notissima*, can be applied much more exactly than to the original fountain in the fable he was relating.

As Creighton points out, it is very difficult in the early records to differentiate between ague and catarrh, with both of which affections influenza is closely allied in the more prominent symptoms. It is, therefore, almost a matter of certainty that the disease has existed from the earliest times, and that those medical historians who believe that the epidemic mentioned by Hippocrates and Livy as occurring in 412 B. C. was influenza are right, as well as those who connect passages in Thucydides with the disease.

There were epidemics from the sixth to the tenth century which certainly relate to influenza, being characterized by catarrhal symptoms and cough; but Hirsch considered that they were not characteristic enough to include in his survey, and accordingly began with December, 1173, as the first authentic epidemic; this occurred in Italy, Germany and England. Other writers take later dates, such as 1239 (Zerviani), 1323 (Gluge), 1387 (Schweich and others), and 1510 (T. Thompson). In England it was prevalent in 1173, as "a certain evil and unheard-of cough" affecting everyone and proving fatal to many.

In the record kept at St. Albans, 1423-1431, the unknown chronicler makes an entry in 1427 to the effect that "In the beginning of October a certain rheumy infirmity, which is called *mure*, invaded the whole people, and so infected the aged along with the younger that it conducted a great number to the grave." Creighton considers this to be undoubtedly influenza. In Paris, during the same year, a similar disease was prevalent generally, and was known as *ladendo*; this, too, from the records is considered to be undoubtedly influenza.

The first pandemic of the disease occurred in 1510, when it was generally diffused throughout Europe, though no mention is made of its appearance in this country except in a foreign account. Sweating is noted as one of the symptoms, and Creighton suggests that the ill-health of Erasmus—attributed by him in a letter from Queens' College, Cambridge, in August, 1511, to a sweat—was very likely due to the after-effects of an attack of influenza in the previous year. The disease spread northwards from the shores of the Mediterranean, and was called *cocqueluche* in France and *coccolucio* in Italy.

Hirsch, in his chronological survey of epidemics occurring between 1173 and 1875, tabulates no less than 299; but this number includes small local epidemics as well as the widespread pandemics. Leichtenstern gives the following list of the most noteworthy outbreaks of the disease:

1510.—Wide distribution over Europe. Direction in general

from south to north. Malta, Sicily, Spain, Portugal, France, Germany, Holland, England and Hungary.

1557.—Asia, Constantinople, Sicily, then towards the north. Italy, Switzerland, France, Spain, Holland.

This country was also included in the area affected, for Creighton quotes a contemporary writer, Wriothsley, who states that, in 1557, "This summer reigned in England divers strange and new sicknesses, taking men and women in their heads; as strange agues and fevers, whereof many died." Stowe records in his *Annals* that, in the harvest of 1558, "quartan agues continued in like manner, or more vehemently than they had done the last year passed, where-through died many old people and specially priests, so that a great number of parishes were unserved and no curates to be gotten, and much corn was lost in the fields for lack of workmen and labourers."

1580.—First real pandemic; at first, a general distribution over the Orient, then Constantinople and North Africa. In Europe the general direction was from east to west and from south to north. From Constantinople to Venice, Sicily, Italy, France, Spain, Portugal, Hungary, Bohemia, Germany, Holland, Belgium, England, Denmark, Sweden and Livonia.

Creighton points out that these widespread volatile sicknesses of 1557-8 and 1580-2, grouped under influenza, were related in time to great epidemics of bubonic plague. These, however, were less noticeable in England than abroad.

Seventeenth Century.—Very scanty reports concerning influenza. In 1627, a great epidemic occurred in North America, spreading thence to the West Indies and South America as far as Chile.

Hirsch records an outbreak in the New England States in 1655. Creighton calls attention to the account written by Willis of three consecutive epidemics in the autumn of 1657, the spring of 1658, and the autumn of 1658, the middle epidemic of the three being influenza, as being the first systematic piece of epidemiology written in England. The doctrine of an epidemic constitution of the season, and that of a seasonal predisposition in the human constitution to which, later, Sydenham devoted many essays, were generally held in those times.

The "Father of English Medicine" gives a special chapter in his *Observationes Medicae* to the "Epidemic Coughs of the year 1675, with Pleurisies and Pneumonia supervening." The epidemic spared hardly anyone of whatever age or temperament; it went through whole families at once.

Evelyn, in his diary, states on October 15, 1675: "I got an extreme cold, such as was afterwards so epidemical as not only to afflict us in this island but was rife all over Europe like a plague."

An epidemic occurred in London and in Ireland in 1688 in which very many people suffered, but very few indeed died from the disease. In the account given by Molyneux of the disease in Ireland he mentions that nearly all the horses suffered, too. At the Curragh, where the army of Ireland was encamped, not ten horses in a regiment escaped.

1709-12.—Probably a single period of epidemics of wide distribution but no particular direction. The mortality was very low.

1729-33.—First invasion beginning in 1729, with the direction from east to west: Russia, Sweden, Poland, Germany, Austria, Hungary, England, Switzerland, France, Italy, Iceland and possibly America.

Second invasion in 1732, probably beginning in Russia. The direction then went definitely to Poland, Germany, Switzerland, France, England, Italy, Spain, and America. Hirsch states that it was apparently a general diffusion over the globe.

1743.—Spread from the coasts of the Baltic to Germany, Switzerland, Italy, France, Netherlands, and England.

1757-8, 1761-2, and 1767.—Epidemics first arose in North America and thence appeared to spread to Europe. Widely diffused in America and West Indies.

Heberden read a paper in August, 1767, at the Royal College of Physicians on "The Epidemical Cold in June and July, 1767."

1781-2.—Decided pandemic, beginning in the autumn of 1781 in China and India, and from thence to Siberia and Russia; then generally over the Eastern Hemisphere.

The Italian name for the disease was formally adopted by the College of Physicians. The name first appeared in English in 1729 in an account of an Italian epidemic. In 1743 the name reached London before the infection, and the disease was so called during the epidemic of that year. The name came into general use in the epidemic of 1775. Creighton remarks that the adoption of this name at last put an end to the ambiguity between epidemic agues and influenzas.

1788-90.—A most pronounced pandemic period. It began in Russia and spread thence over the rest of Europe. In 1789 it became generally diffused throughout America.

1799-1803.—A long period consisting of several invasions and outbreaks of the disease. The first pandemic began in Russia

in 1799, and spread to Galicia, Poland, Germany, France and Denmark. After an interval of five months, a second began in October, 1800. In 1802-3 it was extensively diffused in France and in Britain, with minor outbreaks up to 1808. Between 1811 and 1826, there were numerous epidemics in North and South America.

1827.—Generally diffused through Siberia and Eastern Russia.

1830-3.—A remarkably intense influenza period, distributed over the whole world, and consisting of two or three pandemic outbreaks. The first invasion began in China (1830-1), and spread to Manila, Polynesia, Borneo, Java, Sumatra, and India. The European invasion began in Russia in October, 1830, and advanced in 1831 through Courland and Livonia, Poland, East Prussia, Silesia and the rest of Germany, Austria, Finland, Denmark, Belgium, France, Sweden, England, Scotland, Switzerland, Italy. It reached Spain in January, 1832, and North America at the same time.

A year later a fresh outbreak occurred in Europe, which was of an exceptionally intense character, and travelled from east to west.

A third outbreak originated in Russia in 1833, and was practically identical with that two years before in its course. Three years later a new pandemic invasion travelled right round the world.

1836-7.—After raging in Australia, South Africa, Java, and Further India, influenza spread from east to west in Europe, beginning in Russia and extending rapidly. A primary northern outbreak can be distinguished, spreading from east to west, and a subsidiary outbreak from this point, with the direction from north to south.

1847-8.—The direction of this pandemic cannot be determined very definitely. An epidemic occurred in 1846-7 in England, Denmark, Belgium, Switzerland, and France, and this was followed in March, 1847, by an outbreak in Russia. The principal outbreak occurred in September, 1847, appearing first in France, and from thence extending quickly to Germany, Denmark, England, Scotland, Switzerland, Italy, Spain and Greece. North America was affected in January, 1848.

1889-90.—The most extensive and important of all the pandemic outbreaks, which extended all over the world. It was first observed as an extremely intense outbreak in the interior of Turkestan in May-June, 1889. It took four months to spread to Eastern Russia and Siberia, and five months to reach Petrograd.

From Russia and Finland in November it spread like an avalanche over the whole of Europe. It was general in Germany and Switzerland by the beginning of December, but did not reach London until the second week of December. By the end of the year the whole of Europe was affected. The disease appeared in New York and Boston in the middle of December, and from thence spread over the Continent, appearing in Quebec, Montreal, and Halifax in January. The north and south of Africa were affected simultaneously. It was established in China by the end of February, by which time, too, it had spread to Australia, New Zealand and Borneo.

By degrees all places on the habitable globe were infected, and the last appearances were in Abyssinia in November, and in the highlands of Kashmir in December, 1890. This pandemic spread with far greater rapidity than any of its predecessors. In 1830-1, after first appearing in Moscow, it was eleven months in reaching Spain and North America. In 1889-90, in the same period of time, the infection had covered the whole of the world and extended up into the heights of the Hindu Kush range of mountains.

The disease has had bestowed upon it a plethora of names, both medical and popular. In the early years, it was variously described as *catarrhus epidemicus*, *febris* or *cephalea catarrhalis epidemica*, *tussis epidemica*, *contagious catarrhal fever*. The severity or mildness of its epidemic manifestation can be gauged by the character of the name, the droller names pointing to the milder forms.

In the fifteenth century, the English name was "mure" or "murre," the origin of which is allied to murrain. In the sixteenth century, it was known at different times as "hot ague," then "the new burning ague." This was followed by various cant names such as "the new acquaintance" and "the gentle correction." In the seventeenth century it was known variously as "the new disease," "the new ague," "the strange fever," "the new delight," and "the jolly rant." The names "tac," "sheep's cough," and "sheep's disease" were obviously bestowed on account of the loud bleating cough

accompanying it. Robert Boyle spoke of one sudden outbreak as "a great cold." Horace Walpole called it "blue plagues."

In Ireland, in a medical manuscript of the fifteenth century, it is called *Fuachd* (cold or chilliness) and *Slaodan* (a cough or cold). It is alluded to in some early Gaelic manuscripts under the name of *Creathan* (a shaking or trembling).

In France, the name of *la grippe* first came into use in 1712, at which time it was called in Germany *Galanteriekrantheit* and *Modekrankheit*. These names bear witness to the prevalence of the disease at the time, and that it was the fashionable disease from which to suffer.

Treatment of Influenza.

The respiratory complications of influenza always add to the seriousness of the malady and to the anxiety and responsibility of the doctor, says Doctor McKenzie of St. Thomas' Hospital, London. Every effort should be made to avert them. In the mildest attack of influenza the patient should at once go to bed, and remain there until some days after the fever has subsided. In the event of respiratory complications, the patient should, as a rule, be kept in bed until they have cleared away.

As we have no specific remedy, treatment has to be symptomatic. The cough is the first symptom of importance which demands our attention. The patient may be given barley water, linseed tea, toast and water, or warm milk to sip. Steam inhalations may be employed, such as the well-known vapor benzoini, or an inhalation of eucalyptus and menthol (Menthol xx gr., Tr. Eucalypt. Fol. 3i. 5i. to a pint of warm water). Small doses of heroin hydrochloride, 1/36th to 1/12th of a grain, may be given at intervals of one to two hours. When the cough is frequent, dry, and hacking, a sedative linctus may be tried like the following:

R Morphine Hydrochlorid. gr. ½
Heroin Hydrochlorid. gr. ½
Apomorphini Hydrochlorid. gr. ¼
Acid Hydrochlor. dil. m xx
Syrup. Limonis 3 ss
Aquam Chlorof. ad 3 ij
Ft. linct. Sig. 5i occasionally.

When there is bronchitis a mixture, such as the following is useful:

R Liq. Ammon. Citrat. 5 jss
Pot. Citrat. gr. xv
Vin. Ipecac m x
Aq. ad 3 i
T. d. s.

An ammonia and nux vomica mixture with squill or senega may be given later if secretion becomes profuse. When the secretion is thick, viscid, and expectorated with difficulty, preparations containing opium are contra-indicated and should not be given.

Linseed or linseed and mustard poultices, paplications of antiphlogistine, or turpentine stupes may be employed, when there is tightness of the chest, or soreness or pain on breathing.

The same remedies may be used in cases of broncho-pneumonia, but in this complication, as well as in lobar pneumonia, the main indication is to keep a watch on the heart.

The chief danger in influenzal broncho-pneumonia and pneumonia is cardiac failure. Every effort should be made to maintain the patient's strength. When there are signs of failing heart, stimulants are of special value. Of these the most important are alcohol, strychnin, caffeine, camphor, digitalis and strophanthus. Alcohol is indicated when there is prostration, and specially in cases in which there is delirium and sleeplessness. Champagne and brandy are the best forms in which to administer it. The *mistura spiritus vini gallici* is an excellent combination of nourishment and stimulant.

Strychnin is of great value in failing heart, and should be administered hypodermically in doses of from 1/60th to 1/20th of a grain, being repeated as required at intervals of three or four hours. Caffein is best administered hypodermically in three or four grain doses.

Intramuscular injections of camphor dissolved in olive oil have come much into favor. The ordinary dose is 2 to 3 grains of camphor dissolved in pure olive oil (1 in 10). It may be obtained ready for use in the form of ampoules. Camphor may also be given as a stimulant by the mouth, 5 drops of Rubini's solution on sugar repeated from time to time. Huchard and other French physicians recommend 5 minim doses of the 1 in 1,000 solution of crystallized digitalin (Codex Suppl.).

Digitalis is a remedy which has long been advocated in the treatment of pneumonia, and no doubt it is of value, as Wilson Fox maintained, in cases in which from an early period there is undue frequency combined with weakness of the pulse, or when the expectoration is profuse and bloody, and in cases of alcoholism when there is profuse sweating; but it should be given early in these cases, and combined with alcoholic stimulation. Wilson Fox believed, however, that it was contra-indicated and even dangerous in old people.

Strophanthus is another valuable cardiac stimulant. The best form to employ is hypodermic or intravenous injections of strophanthin, dose 1/500 to 1/100 grain. The latter is the better when rapid effect is desired.

An old-fashioned remedy sometimes employed, with advantage in cases of prostration in elderly subjects is musk. Five to ten grains may be given in a cachet, or it may be prescribed in the following form:

R Moschi gr. iij
Sp. Ment. Pip. ℥ xv
Sp. Ammon. Aromat. ℥ xiv
Ex. aquam. p. r. n.

Or, as Sir Dyce Duckworth advises, combined with Hoffman's Anodyne, as follows:

R Moschi gr. v
Sp. Ammon. Aromat. ℥ xlv
Mucilaginis ʒ i
Aq. Aurant. Flor. ʒ i
Ft. haust. p. r. n.

Sleeplessness is sometimes a prominent symptom and, when combined with delirium and prostration, a cause of great anxiety. Opium and morphia are usually contra-indicated, on account of drying up the secretions and clogging the air passages, and great caution is needed if they are administered. Probably one of the best combinations to employ is chloral and potassium bromide, 15 grains of the former with 30 grains of the latter. Chloralamide has been regarded as safer than chloral, but it is not so effective in producing sleep, and lately it has not been obtainable. Other hypnotics, such as paraldehyde, sulphonal, trional, dial, and veronal, may be employed, but I have found them all uncertain in their action in the sleeplessness of pneumonia. Whatever hypnotic is employed, alcohol should also be administered.

Sponging, the application of cold compresses, or the wet pack, may be used in cases of sleeplessness or when the temperature is high.

Oxygen inhalations should be employed when there is dyspnea and cyanosis; the rate of the respirations and the color of the lips and extremities will be the best indications or their employment. They should be given for such times and at such intervals as the condition of the patient demands, but should not be given continuously unless the condition of the patient is desperate.

The diet should consist mainly of milk, beaten-up eggs, beef tea, chicken broth, rusks, calf's foot jelly, etc. Often there is an utter distaste for food. The mouth, the tongue, and the teeth should be kept as clean as possible. The action of the bowels should be carefully attended to.

The room in which the patient is nursed should, if possible, be large and airy, but he must be kept out of the way of draughts. If there is bronchitis, screens round the head of the bed and a bronchitis kettle are advisable. At this time of the year a fire should be kept up in the room day and night, but the room should not be allowed to get too hot. A temperature of about 62° F. is best for the patient. With a fire in the room the window can be left open. Purity of the air of the sick room is more important even than its temperature; but one must use common-sense in these matters and avoid extremes in both directions.

The best prophylactic against influenza and its respiratory complications is fresh air. Nothing is more striking than the manner in which influenza spreads in stuffy and ill-ventilated hotels. Sir Dyce Duckworth has called attention to the risks of picking up influenza in trains. We are far in advance of our continental neighbors, friends and others, in our love of fresh air, but there are still far too many who regard an open window as a source of danger, and insist on closed windows in trains, hotels, and all places of public resort. Fresh air is the best disinfectant, but it must also be remembered that where there is dust or dirt there is danger. The interiors of houses, shops, offices, workshops, theatres, meeting halls, churches, and public conveyances, must be kept clean as well as airy if they are to be safe and free from the germs of such a disease as influenza and its complications.

It has often been pointed out that influenza differs from other infectious fevers in the fact that one attack does not lead to immunity from others. Persons who have had one

attack indeed seem to be rather more than less susceptible when exposed to infection. If the influenza bacillus is the cause of the malady, there would be no theoretical reason for expecting a vaccine prepared from it to confer any immunity of more than short duration; but on the supposition that the true virus is still undiscovered, we may still be able by means of a vaccine to protect the body from the allies, which are several times more dangerous than the virus itself. A vaccine of this kind has been suggested by a committee of expert bacteriologists for tentative use in the Army. Two prophylactic inoculations were recommended. The first was as follows: B. influenzae, 30 millions; pneumococci, 100 millions; streptococci, 40 millions. After 10 days a second was given twice as large as the first. Exception was taken to this by more than one authority on the ground that the dosage of influenza bacillus was too small, and that to be effective a dose of 200 or 300 million B. influenzae should be employed. It was suggested that, in the treatment of chronic cases of secondary infection, doses of one-fifth the first dose might be employed. The use of a vaccine in severe secondary broncho-pneumonias was not recommended, but one-twentieth of the first dose was suggested as a suitable dose. Vaccine treatment must at the present time be considered as only on trial, and a matter of theory rather than of proved utility.

W. H. Wynn of Birmingham, discussing the "Treatment of influenza broncho-pneumonia, with special reference to vaccine therapy," believes that the treatment of an acute infectious disease of bacterial origin resolves itself into providing or enabling the patient to provide sufficient antibodies to overcome the bacteria and their toxins. We know of no drug which, given in therapeutic doses, will destroy bacteria within the living body. The only examples of specific drug therapy concern the protozoal infections, such as syphilis, malaria and sleeping sickness. No doubt in the future synthetic chemistry will furnish us with drugs having a similar action upon bacteria. The discovery of the specific action of ethyl-hydrocuprein upon pneumococci foreshadows this.

With vaccine treatment as with expectant treatment, certain preliminary measures are fundamental and must be carried out promptly and efficiently. Before all things place absolute rest and free ventilation. With the scarcity of nurses the majority of patients are nursed by unskilled friends, and the doctor must give exact instructions, preferably in writing. It is not sufficient to see the patient in bed; the bedpan must be insisted upon, unnecessary movements in bed and unnecessary talking must be forbidden. Even trained nurses do not always appreciate the need for strictness, and there is often too much effort caused by routine washings and rubbings, reaching for the sputum-mug, and sitting up to cough which might be saved the patient. One garment should be worn, and much exertion is saved by slitting it down the middle. One too often sees a struggle to get nightshirt and vest over the arms and head for the purpose of examination.

Windows should be open widely night and day, and the bed should be in the centre of the room, unscreened. The temperature of the room should not exceed 60°. When first seen, the patient is usually too warmly clad and with too heavy bedclothes. Avoid extremes of heat and cold. The patient should feel that the surroundings are pleasantly cool. Sheets next the patient are more comfortable than blankets and more likely to aid sleep.

A useful routine diet is of milk (citrate if there is vomiting) and albumen-water, 5 oz. of each alternately every two hours. Patients are usually thirsty, and will take abundance of plain water or lemon water. But, unless insisted upon, the need of water is usually overlooked. Many persons still think that it is dangerous for a feverish patient to drink plain water, and this notion must be overcome.

Beef-tea and chicken-broth should have no place in the treatment of pneumonia. But, for the sake of the flavor, a teaspoonful of beef-tea may be added to the albumen-water.

Regular attention must be paid to the hygiene of the mouth. Tooth-plates must be removed. The mouth should be wiped out every two or three hours with a rag moistened with a dilute watery antiseptic. Mouth washes containing glycerin are objectionable. A little oil placed in the nostrils or a liquid paraffin spray helps the patient's comfort.

The general environment now being such that the patient can make the best use of immunizing stimuli, the question of specific treatment can be considered.

Broncho-pneumonia may develop in a patient as an after-complication, or it may be present from the beginning. As cases beginning mildly may later develop serious pulmonary signs, vaccine treatment, if it can be shown to cut short a simple acute influenza in its early stage, would prevent much broncho-pneumonia and have a wide field of usefulness. Prompt treatment with vaccine within a few hours of the onset will definitely abort an attack of influenza.

The striking feature with the use of vaccines has been the almost constant fall in temperature following the injection. The earlier the injection is made, the more likely is the fall to be final. In cases injected after the second day, more than one injection is usually required before the temperature finally settles. Occasionally the first dose fails to cause a drop in the temperature, and a second larger dose is required to bring this about. If the fall of temperature occurred alone, or was followed by collapse or other bad signs, it would not be desirable, but the fall is associated with improvement in the aspect and in the pulse and respiration rate, which indicate that it is due to a definite immunizing response.

The youngest patient injected was a baby twelve months old. She had broncho-pneumonia ushered in with convulsions, and was injected on the third day with 15 millions streptococci, pneumococci and influenza bacilli. When seen again 36 hours or so later, she was sitting up in her cot playing. The oldest patients were a man and wife, 69 and 68 years old, injected on the second and first day respectively. Both had much basal congestion of acute onset, and responded well. Children answer to vaccine treatment particularly well, and take relatively large doses.

The important points for successful treatment are to give an adequate dose as early as possible after the onset of symptoms. Inadequate dosage and delay will cause disappointment. The vaccine used has contained several strains of pneumococci, streptococci, and *B. influenzae*. In a few cases, *B. Friedlander* has been added, because the sputum in these patients contained this organism. In some localities it might be desirable to add *M. catarrhalis*. Until the bacteriology of the disease has been more thoroughly worked out, vaccine treatment must necessarily be largely empirical, but experience has shown that these three organisms are most commonly associated with influenzal broncho-pneumonia, and a vaccine composed of them gives good results. The information so far collected points to the influenza bacillus being the cause of the cyclical epidemics, and having the power of enhancing the virulence of the organisms with which it is associated. It is the Bolshevik agent stirring up strife in many lands among a bacterial population of itself inclined to local outbreaks of violence. These organisms have been used in varying doses.

For an adult man the author recommends a dose of 80 to 100 millions of each organism; for an adult woman, 60 to 80 millions; for a child of 10 or 12, 30 to 50 millions; for a child of 2 or 3, 10 to 20 millions.

Experience teaches that reactions are much more easily produced in patients suffering from chronic localized infections, and that a negative phase is not to be feared in acute infections with doses of the size given above. The mode of action of a vaccine in acute diseases cannot at present be explained, but it is apparent that the patient's tissues can more easily utilize as antigen the dead germs contained in the vaccine than the living and rapidly multiplying germs within the body. During the incubation period there is rapid increase in the infecting organisms but no immunizing response, otherwise the infection would not develop. It is not until comparatively late in the disease that the manufacture of antibodies is sufficient to cope with the infection. Possibly one explanation is that the infecting germs surround themselves with "aggressins" which inhibit the immunizing machinery, whilst the injected dead germs are free from aggressins and so can be used as antigen. This absence of antibodies during the early stages and incubation period also explains the safety with which comparatively large doses of vaccine can be given. During the later stages antigen is provided in abundance naturally, and the immunizing machinery is stimulated to its utmost. Vaccine is then probably useless. Still later, in conditions of delayed resolution or chronicity, vaccines again become useful.

Symptomatic Treatment.—Antique

The relief of pain, cough, and sleeplessness will indirectly assist in the production of immunity. Leeches, when obtainable, give quicker relief to pleuritic pain than any other measure. Light linseed and mustard poultices, applied to the congested areas in such a way as to avoid embarrassment of breathing, do much good. Dry-cupping might be revived with advantage. Efficient counter-irritation is far more important in these cases than in ordinary lobar pneumonia. Cough is often allayed by these local measures. Chlorotone in liquid paraffin, 1 in 50, used with an atomizer for the throat and nose, may relieve pharyngeal irritability. Linctuses, containing codein, heroin, or tr. camph. co., may be used in the early stages, but are apt to derange the stomach and must be used sparingly. The cough, though troublesome, is necessary. Paraldehyde, dr. 1 or 2, in strongly sweetened tea, is the safest hypnotic. A combination of $\frac{1}{2}$ to 1 dr. paraldehyde with 10 grs. of trional is often effective but less safe. In the severe cases with great excitement and struggling, one-hundredth of a grain of hyoscine is the only remedy likely to have effect. When sputum

is scanty and viscid, small doses of iodides or ammonium chloride may be useful; but when, as is more usual, there is much bronchial secretion, these drugs by increasing it embarrass the breathing. On the other hand, 1/200 gr. of atropin occasionally injected with discretion may give great relief.

In these influenzal cases, *circulatory failure* from depression of the medullary centre and consequent vasomotor paralysis seems to play as important part as direct heart failure. When these are present, our difficulties are great. One great advantage of cutting short the disease in its early stages by vaccine treatment is that circulatory failure is prevented. Much may be done in the way of prevention by aerotherapy, the avoidance of exertion, the administration of cane sugar, malted milk, honey or milk sugar, to feed the heart, and the administration of oxygen. Many physicians regard the use of oxygen as disappointing, but no remedy is more badly administered. The futile method of holding a funnel over the patient's face is still commonly practised even in first-class hospitals. Administered through a proper mask and warmed, there is no doubt of its good effects. An excellent method is to enclose the head in a hatbox with a piece cut out to fit the neck, and the oxygen tube passed through a hole in the side. It should be administered for five or ten minutes at a time.

For vaso-motor failure, *pituitrin* $\frac{1}{2}$ cc. every six hours, and *camphor* grs. 3, in ether min. 3 and olive oil min. 12, given every four hours, in both cases intramuscularly, have given the best results. Five minims of liq. strychnine injected four hourly, and alternating with the camphor injections, may be of help in vaso-motor failure. In spite of common opinion, experiments show that it has no action upon true heart failure. It is a powerful stimulant to the respiratory centre, but this centre is already over-stimulated by its natural excitant, carbon dioxide. With *digitalis* and *strophanthus*, we reach highly debatable ground. Their use has again risen in favor, but there is no experimental evidence to support the giving of digitalis to the heart in fever.

Alcohol has come into favor again, and in many cases seems to be the only drug used. Beyond the temporary reflex stimulation caused by the local effect upon the mouth, pharynx and stomach, it is now well established that alcohol is principally a depressant. It also lowers the resisting power to infection. Patients accustomed to alcohol are able to detoxicate the amounts usually given, and in such subjects it may be continued without harm. But to give, under the guise of a stimulant, a depressant drug which moreover inhibits the immunizing processes to patients who are unable to neutralize its effects, cannot be sound treatment. Still, the pharmacologist must give way to the practical experience of the physician if the latter can prove his case. But no proof has yet been advanced that alcohol is of service in circulatory failure.

Of other drugs, *caffeine citrate* 5 grs., three times a day in a strong cup of coffee, frequently acts well. In collapse, *saline infusions* with *glucose* 5 per cent. injected subcutaneously of very slowly into a vein have a distinct life-saving value and are too seldom used.

Only the confirmed therapeutic optimist can face with equanimity these cases of failure from toxic exhaustion. It is difficult to refrain from giving some drug; but the truth must be faced, that we have no drug of undoubted value—no drug, even, of which the indications for its administration are clear. Our real hope lies in the establishment of sound lines of specific treatment, so that by its early administration broncho-pneumonia may be robbed of half its terrors.

Influenza as It Affects the Air-Passages.

Sir St. Clair Thomson, Professor of Laryngology in King's College Hospital says an influenzal catarrh is no necessary part, nor even a usual part, of an attack of true influenza. This is worth remembering, for there can be no doubt that the channels through which the disease is received are, normally, the nose and throat. Yet the infection does not make any great onslaught on these routes of attack. It appears to march straight on for 24 or 48 hours before it comes into action in the bronchi or lungs, and then, when entrenched there or elsewhere in the organism, it turns with increased virulence to attack the nose and throat. Like the slower acting tubercle bacillus, it seems necessary for the microbe of influenza to descend into the lungs, there to be born again to fresh vigor, or to undermine the general resistance, before it can successfully damage the channels along which it made its invasion. Now, much of the damage then effected in the nose and throat escapes notice during the acme of the attack, being overshadowed by more serious or more obtrusive symptoms elsewhere. It is only when the tide of battle has died down that the patient and his adviser begin to realize that along the lines of invasion serious mischief has been left behind.

In the present epidemic it seems that the manifestations of

(Continued on p. 99)

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A Medical Trade Union?

A mass meeting of licensed physicians of all schools was held in Brooklyn February 24, representatives of the dental and pharmaceutical professions of Kings County also participating. The immediate business of the meeting had to do with the health insurance bill, but some sort of a permanent league or guild is in contemplation.

A committee was appointed and the delegates of the various societies will be duly accredited thereto by the organizations which they represent, with power to act, any steps taken to be binding upon the parent units.

The permanent league will act upon all matters bearing upon the legislative and economic interests of the allied groups.

Generous donations were subscribed looking to the proper financing of the league.

Resolutions were passed opposing the health insurance bill, but opinion seemed to favor an equivocal attitude toward the principle involved, for a committee was in fact appointed to draw up proposed amendments to the bill. Thus the spirit seemed to be one of "collective bargaining" and a "minimum wage" rather than one of uncompromising opposition. This is a matter of disappointment, for the health insurance project is one which ought to be resisted as a sheer wave of poison gas wafted upon us by the Sage Foundation, which is spending \$73,000 for propaganda work to complete the anesthetization of working men and physicians. Aside from the palliation of industrial evils and the exploitation of the medical profession the result will be good jobs for politicians—six State secretaries at \$8,000 salary each and thousands of panel assistants, at a total expense of \$5,000,000 annually, of which \$3,500,000 will be a

tax upon working men and their employers. How much of this expenditure is likely to go to physicians may be guessed from the European experience. In Germany the pay has been one mark for a visit, in France one franc, and in England one shilling. For the care of hospital cases the institutions but not their staffs will be paid. But the bad economic features of the project, however bills may be amended, are altogether apart from its certain demoralizing effect upon the profession, the working class and the cause of preventive medicine. It is nothing in essence but a brazen attempt to evade a square deal in the industrial field with the connivance of the medical profession. Shall the American Junker class be permitted to succeed in effecting what will prove to be permanent enslavement and degradation?

We should be heartily in favor of the proposed Kings County league and of similar organizations if they concerned themselves with principles rather than with cheap messes of pottage possessing toxic as well as "nutritional" properties.

We are not propagandists, or uplifters, or evangelists, but only commentators. It would be hopeless to attempt to effect a change in any professional element undistinguished for character—if there be any such; but if principles are to be disregarded we conceive it to be our editorial function merely to note the fact and the results and characterize them properly. That is as far, of course, as our interest or our duty obligates us.

Medical and Social Parallels.

Georg Brandes, the distinguished Danish critic, in a recent article in the *Politiken* of Copenhagen, resorts to medical imagery in accounting for present disorders in Europe. He thinks we have been living in the midst of an epidemic like that spread by the medieval flagellants—a war competition in which the different governments have been flayed while flaying others—and that this has been followed by a new scourge, otherwise "The Revolution."

"Just," he says, "as in 1348 the black plague from Asia spread to Europe and gave the flagellants a new impetus, so is the social revolution spreading and breeding pestilence from Russia to Finland, threatening all northern civilization in those countries with destruction. Thereafter it is likely to spread to the whole of Scandinavia, and thence to Italy and other countries already devastated by the present war. Perhaps the riots that have taken place in peaceful but much too easy going Copenhagen may open the eyes of the Danes to the seriousness of the situation and warn them that this is no time for cabaret fun or tango balls."

Everybody is compelled to fall back upon medical imagery if the conditions in Europe are to be well explained, but why is it that there is so much intolerance when one attempts to point out the curative indications in the light of what we have told the world about nature's healing processes in the case of the human body?

The manufacture of antibodies by the social organism appears to be "verboden." Only force can be conceived of by our reactionaries, which is just like old-fashioned bleeding and salivation.

Force, of course, never cures social pestilence, any more than salivation ever cured pneumonia.

We noted a recent instance of the medical metaphor in a speech by Senator Reed. After saying that the material rights of the American people were being overlooked in the general scramble to effect universal pacification, because the American Government had been asleep at its post, the Senator continued:

"We may be guilty of *auto-intoxication* [italics ours] voluntarily as a nation. We impose upon ourselves the idea that we are in love with all the world and all the work is in love with us; that we are perfectly good and perfectly unselfish and that all the rest of the world had a change of heart at the same time as we did. We may convince ourselves that the day has come when the lion and the lamb will cavort together on every hillside and every child or any other thing may lead them around. But this dream will be rudely dispelled. Those who seek to impose it upon our people will in the end find they have done their country a disservice. Every time a false doctrine is taught in this world it brings bad results."

Allan L. Benson, writing in the *Sun*, remarks that "Every Government that does not intend to give its people a square deal may therefore well fear Bolshevism. In such times as these ideas are sometimes as infectious as Spanish influenza. Weaken the social body with suffering and despair and the proper environment is formed for the reception of the germs."

So we may say that modern medicine is contributing to the elucidation and clarification of the complex problems of the day, as well as performing its regular functions. We say modern medicine advisedly, for it is the terminology of the present day that fascinates the rhetoricians.

Remedies for the ills of the world might be founded upon worse than medical doctrines of healing. Antibody schemes could very well be formulated. The League of Nations may be thought by some to represent such a plan, but so far as we know no publicist has drawn upon medical language in discussing its proposed functions in behalf of the much diseased social body.

The Defeat of Objectionable Legislation.

It is an excellent suggestion that Dr. John P. Davin has made with respect to an effective mode of defeating objectionable medical legislation.

Hitherto, Dr. Davin points out, the State Society has waited until the eve of the passage of medical laws, before entering its protest formally before the legislature. On all such occasions only perfunctory hearings have been held before a body more or less biased against an attitude of opposition to its findings.

So Dr. Davin suggests that such matters be placed before every county medical society in the State for their consideration in time for deliberate action by such societies, the results to be forwarded by the secretaries to the members of the legislature representing the various counties in the State.

In this way it is believed that the profession would command a hearing and compel a respect for its representations that hitherto it has not been able to command when action was delegated to a committee appearing before the legislature generally at the eleventh hour of its session.

This would seem an especially effectual way of meeting the annual health insurance raid upon the profession. An emphatic notice to our legislators from every county society to the effect that we would not serve if a bill were passed ought to produce the proper effect.

This method is justified in the face of a coercive conspiracy, seeking brazenly to dragoon the profession into an undignified position, and we would be doing the legislators a service by informing them of our sentiments.

There is need of greater clarity regarding our thinking about health insurance. It is not a question of adequate or inadequate compensation, but of principle.

The principle of health insurance is bad and should be rejected by us root and branch. It is a miserable palliative, a sop to labor, a substitute for industrial justice, seeking to use us as its tools in the cajolery and degradation of the workers. If we are among those who seek to defraud and debauch labor, and in so doing are willing to degrade the medical profession, then we should help the health insurance propaganda along or at least cease our protests.

It will not be malapropos to state at this point what we understand by industrial justice. We mean the setting up of a "human and Christian, in contrast to the purely commercial and pagan, ethics of industry," which would involve the abolition of the wage system altogether, for "full possibilities of increased production will not be realized so long as the majority of the workers remain mere wage-earners. The majority must somehow become owners . . . of the means of production." This programme is not that of the I. W. W., gentle reader, but of the National Catholic War Council, and one of the four men who framed it was the new Archbishop of New York.

When this system of ethics is applied, as it will be, does anyone suppose that health insurance will be needed?

Let us align ourselves with the forces of decency.

Miscellany

CONDUCTED BY ARTHUR C. JACOBSON, M. D.

An Obsession Cleared Up.

Propagandists in America interested in promoting here German compulsion methods have fervently pointed out the example of Teutonic institutions like health insurance as models of what paternalistic government can do for the people, but real interpretations, like that of Gustavus Myers ("The German Myth," published by Boni and Liveright, New York), show the grinding oppressions relentlessly exercised upon the workers of all descriptions and the farcical nature of the much-bepraised social-insurance laws.

The social insurance of the Germans simply masked rotten conditions instead of remedying them, but Teutonic propaganda had led us, before the war, to believe that Kultur was really efficient and beneficent. We sincerely believed in many of the allegations regarding the efficacy of the compulsory insurance schemes, which in reality served no purpose other than to complete the process of crushing independence of thought and action chiefly effected by the German social, educational and militarist system. It was all a Bismarckian wheel within a wheel.

American propagandists of the same stripe as the Teutonic sociologists are again as busy as they can be, despite the gentlemen's agreement into which they entered to take no action until the return of all physicians in Government service.

We must be prepared to give our would-be oppressors the shock of their lives.

The Gentle Art of Boob-Bumping.

So it now appears that the patent medicine interests will gain hugely through prohibition, which helps to throw some light on that movement's triumphal progress.

A large gold-plated brick is in process of being sold to the American people at an exorbitant price in health, cash and industrial interests.

But the precious patent medicines will remain. Beef, Iron and Wine, with its 80 per cent. of sherry, will be purchasable by the jug. The cough mixtures, with their 25 per cent. of alcohol in some cases and heroin to boot, will beggar the claims even of absinthe as a third-rail beverage. Bunk's Bitters and the rest of the awful list remain sacred.

It is hard to figure out whether our tyrants are humorists or paranoiacs. In any case, they are highly efficient boob-bumpers.

In Bootleg Days: 1920.

"Bar, bar! Landlord—

Have you any rum?"

"Yes, sir; plenty. Only keep it mum!

Some for the rascals, more for the drunks.

None for the doctors, sober men, or monks."

—Evening Sun.

(Continued from p. 96)

influenza on the nose and throat have been less severe than in the first epidemic in 1890, and the several recrudescences since. But of this we laryngologists cannot speak until three or more months have passed; it is generally in the months of spring that cases of "catarrh," "throats," "hoarseness," and so forth are brought to us because they do not clear up, and we then find they are due to the legacy left by influenza in the form of sinusitis, septic tonsillitis, laryngeal palsy, or other lesions.

Epistaxis.

One striking exception to the last general statement is the occurrence of epistaxis. Those who have had as large an experience as 2,247 cases—including 163 deaths—report that nose-bleeding was sometimes abundant and recurring, and that rhinitis with epistaxis was present in no less than one-third of the cases. In several cases, over 12 ounces of blood were lost.

Such cases will generally yield to the simpler remedies for nose-bleeding—application of cold, the insertion of ribbon gauze or cotton wool moistened with adrenalin or hydrogen peroxide (5 vols.), steady compression of the nares with the thumb and forefinger, hypodermics of morphia (gr. 1/6 to 1/3), and lowering of the blood-pressure—if indicated. In any case, and particularly if nose-packing is required, it is important to remember the almost constant area in the nasal mucosa through which the blood escapes: it is from the surface over the cartilaginous septum, about 1/2 inch inside the vestibule and 1/4 inch above the floor of the nose. This area is easily exposed with reflected light (even from a candle), and if blanched and anesthetized with cotton wool, moistened with equal parts of cocaine (10 per cent.) and adrenalin, a strip of 1 inch ribbon gauze can be gently but firmly packed on to it so as absolutely to control any hemorrhage. The plug is never left more than 24 hours; its removal may be facilitated by soaking with hydrogen peroxide (5 vols.).

Inflammatory Affections.

The Nose.—In the early stage an acute rhinitis may occur, which, except by the presence of general symptoms (rigors, pains, fever), cannot be distinguished from an ordinary acute catarrhal rhinitis. The occurrence of this "influenza cold" has not been prominent during the recent outbreak, and the catarrhal discharge has been slight. It is more usual to meet with a typical septic infection of one or more accessory sinuses, but this is more likely to occur after a sore throat, or general symptoms have manifested themselves. The patient then states that, after the onset of influenza, a profuse muco-purulent or purulent discharge appears from one or both nostrils, while the neighborhood of the orbit may become tender and puffy, and severe pain may radiate along the first and second branches of the trigeminal-nerve. It is this pain which is so frequently treated as simple "supra-orbital neuralgia" or "face-ache," without its being recognized that the real cause is an inflammatory process in the subjacent frontal, ethmoidal, or maxillary sinuses. Sometimes the symptoms round the orbit appear, although no pus can be discovered in the nose.

If the sphenoidal sinus is affected, the symptoms will consist chiefly of post-nasal discharge, pain referred to the occiput, or deep between the eyes, and, not infrequently, marked somnolence. The sinus infections from influenza are generally relieved as soon as there is a free discharge of pus from the nose.

Pharynx.—A diffuse inflammatory condition of the nasopharynx and pharynx frequently occurs in influenza. Lacunar

tonsillitis may occur, and the deposit in the lacunæ is apt to run together and to form a false membrane extending even on to the fauces. Quinsies may also form.

Larynx.—Acute catarrhal inflammation has not been common in the recent epidemic. Painful hoarseness may be due to inflamed and even abraded cords. Or the vocal cords may not be affected, so that the patient's voice is but slightly altered, while he complains of the raw or burning pain, a swollen feeling, and difficulty in swallowing.

Cough.—A barking, inveterate cough is another legacy of influenza. Sometimes it consists of a long-drawn whoop, followed by a succession of exhausting, explosive, expiratory coughs. This is frequently referred by the patient to the region of the trachea, and, while it is possible that the point of irritation may be situated in the wind-pipe, we have no means of settling whether it may not be in the larynx or pharynx. Not uncommonly, these coughs, left after influenza, owe their origin to pus in the accessory cavities trickling backwards into the naso-pharynx. This auto-intoxication may induce many symptoms suggestive of phthisis:—loss of flesh, sweats, rise of temperature, dyspepsia, expectoration of pus, etc. Even alteration of the pulmonary breath sounds may occur, with diminished expansion. In such cases the examination of the sputum, and the tracing of pus to its true origin, determine an exact diagnosis.

Treatment.—The general treatment is of primary importance in the inflammatory infections. Many cases of acute sinusitis drift into chronic empyemata through neglect. The patient should remain in bed until the acute stage is past; he can be kept very warm, but with his bedroom windows widely open. Tenderness or neuralgia is met by having the head wrapped up in a woollen shawl; hot fomentations are applied over the affected side, or the patient may lie with his face on a rubber hot-water bottle. If the maxillary sinus is affected, and there are any suspicious bicuspid or molar teeth on the same side, they should be removed. The pain can be met with phenacetin, caffeine, aspirin, or similar drugs, but when severe, there need be no hesitation in giving hypodermic injections of morphia. As regards local measures, it is well to avoid carefully the use of sprays or lotions, and there is the risk of their carrying it to the ear. The routine use of a saline or alkaline nose lotion is uncalled for. It is better to prescribe the following:

R Menthol 1/2 dr.
Tincture of Eucalyptus..... 3 oz.

A teaspoonful of this is put in a pint jug of steaming water, and the vapor is inhaled up and down the nose every two or three hours. It generally relieves pain, it frequently stimulates a free discharge and patients are satisfied that it "clears the head." Relief can safely be obtained by puncturing the suppurating antrum from the nose, and washing it out with a tepid sterile saline solution. Relief to the frontal and sphenoidal sinuses may be secured by packing the neighborhood of the middle meatus, for a few minutes every day, with a pledget soaked in cocaine (5 per cent) and adrenalin. Experience shows that these sinus suppurations are more apt to occur on the side of the nose which is the more obstructed (by deviations, spurs, etc.); if the middle turbinal is very crowded, and evidently acting as an obstruction to the vent of discharge, its anterior portion can be removed. When the acute stage is past a simple alkaline nose lotion may be employed.

A guarded prognosis should be given as to the relief of anosmia. Beyond seeing that the nasal cavities are in a healthy condition, it is well to refrain from local measures. All the usual alkaline lotions containing carbolic or the usual volatile antiseptics, like menthol, camphor, eucalyptus, thymol, etc., should be avoided. A long-continued course of strychnin, together with general measures, is more likely to be successful. The same line of treatment applies to neuroses of the larynx, but paralytic conditions of the cords may be improved by the use of electricity.

The paroxysmal cough is sometimes obstinate. Bromide or chloral hydrate may be indicated. Sedative sprays and lozenges of menthol, heroin, codeia, or morphia, should be tried. Cocain is best avoided, for the anesthesia produced is alarming and disagreeable to the patient. These cases sometimes include what we regard as "stomach coughs," and doubtless there is a change in some of the other branches of the pneumogastric. Morphia and opium, given by the stomach, are often, therefore, extremely useful; the effect of bismuth may be tried; and Warburton Begbie's mixture can be recommended:

R Diluted Hydrocyanic Acid..... 1/2 dr.
Diluted Nitric Acid..... 1/2 dr.
Glycerine 1/2 oz.
Infusion of Quassia..... 6 ozs.

A tablespoonful in a wine glass of water three times a day. While the various forms of linctus and syrup are helpful,

it will generally be found that some suitable mixture will be effective; and, for those who can afford it, there is nothing better than rest and change.

The Cardiac Complications of Influenza.

Sir James Mackenzie, consulting physician to London Hospital, believes that the effect of influenza upon the heart, in the great majority of cases, is like that of any other febrile affection which pursues a favorable course. The heart's rate is increased, there may be a slight increase in size, and systolic murmurs may appear. If we recognize these signs as but the reaction of the heart to the febrile state, we need attach no importance to them.

But there are cases in which the heart is seriously affected. It is rarely, however, that the heart is the only organ affected, and its manifestations are but a portion of the picture. In these more serious cases the disease has attacked other organs, the symptoms due to affections of the lungs and bronchial tubes usually being most in evidence, though the cerebral condition comes into the picture not infrequently.

The cardio-vascular phenomena in serious cases are the same as in other cases of severe infection. The heart in all fevers reacts to three different stimulations: (1) the rise of temperature; (2) the toxins produced by the microbe; (3) the direct invasion of the heart by the microbe. All these may be present in the same individual in varying degrees. When life is endangered, the phenomena are very characteristic. The chief sign in all cases of danger is the early appearance of that dusky hue which every experienced clinician recognizes. The pallid cheeks with a slight tinge of blue, and the dusky red lips, are always signs of gravity in any form of infection. Coupled with this, there will invariably be an undue rapidity of the pulse—120, 130, 140—per minute with, it may be, a moderate temperature. The pulse often at first is full, but the beats are not strong nor is their force sustained; later the pulse becomes small and thready—a very ominous sign. The heart itself is increased in size, not usually to any considerable extent, and the sounds become soft and muffled, sometimes with systolic murmurs. These are the phenomena which indicate danger in all cases of pneumonia, broncho-pneumonia, and bronchitis. When an attack of influenza threatens life, it is associated with the physical signs of these diseases and usually with delirium and unconsciousness.

The picture is really not one of heart disease, or lung disease or brain disease, but that of intense intoxication of these different systems; when the patient dies, it is not so much because of the heart failure but from the intoxication, though no doubt evidence of damage can be found in the heart.

In the treatment of these severe cases we have no remedies of value so far as the heart is concerned, and the only hope is to employ such aids as will tide the patient over a serious crisis. Apart from vaccines, it is the management of the patient as a whole that helps, and here intelligent nursing is of most avail. The cleansing of the mouth and teeth, careful regulation of the bowels, sponging of the body and making it comfortable, discreet dieting—especially the avoidance of too much sloppy foods—with small portions of solid food that compel chewing, if the patient is conscious.

Sir James has never seen any case of influenza in which damage was limited to the heart alone, such as occurs in rheumatic fever. That pericarditis, endocarditis, and myocarditis occur along with lung complications, has been repeatedly demonstrated *post-mortem*, but he has never seen a patient recover with damaged valves.

The great majority of patients not only pass through the febrile stage of influenza with no sign of damage to the heart, but their recovery is rapid and complete. Even many who are compelled to work during the attack, or forced to resume work before the fever has subsided, suffer no harm.

But there are a number, even among those who seemingly had but a mild attack, in whom convalescence is slow and protracted, and these may feel far from well for months or for years after the attack. In these people the complaints often have a distinct reference to the heart, the patient being conscious of palpitation and discomfort or pain in the chest; as they are often easily exhausted by exertion, the conclusion is widely accepted that the heart has been damaged and treatment, pursued with this conception of the complaint, often does much harm. These cases are, however, not cardiac, in the sense that the weakness is due to some affection of the heart. It seems that the condition is rather one of poisoning which affects the body generally, but in which the cardiac manifestations are most in evidence. If, however, a careful study is made of the patient, other signs will be discovered.

In people suffering from some toxic influence, the central nervous system is always affected. This is shown by the sense of feeling ill, by depression, and irritability of temper. There

is also evidence of vasomotor disturbances, as shown by susceptibility of the peripheral circulation; the hands and feet persistently cold, or made so by excitement.

Taking into consideration all the facts, it will be found that the weakness after influenza is not, properly speaking, entirely cardiac in origin, but is the outcome of an injury to other systems as well as the heart, such as the central nervous system. Even when we find such marked abnormalities as increased rate, systolic murmurs, and an increase in the size of the heart, or the occurrence of irregular action due to extra-systoles, the cause of these signs ought not to be looked upon as heart disease, but merely as part of the manifestation of general illness. The importance of this point of view will be realized when we consider the treatment.

The principles of treatment should be devoted to increasing the health of the body as a whole in such a way as to increase the natural resistance to infection, to eliminate toxic influences, and brace up the whole man bodily and mentally. The best way to achieve this is by fresh air and judicious exercise in the fresh air.

When all fever has subsided, the author encourages the patient to get up and go about quietly, leaving it to the patient to stop any exertion that produces fatigue. As he improves, find out the form of outdoor exercise which gives most pleasure, and recommend him to start on it as soon as possible.

Writing on disinfection of railways carriages, public vehicles and dwelling-rooms, Sir Dyce Duckworth says: for so-called prophylactic remedies in influenza he has more faith in the action of quinin than in any other drug. He adds a word on the value of douching the head and face with water (as hot as can be borne) in cases of distressing influenza headache associated with sinusitis—the *gravedo* of the older physicians. The relief afforded is very noteworthy. He especially recommends the adequate disinfection of railway carriages, public vehicles and dwelling-rooms which patients, suffering from influenza, have been using. It has frequently occurred to him that people are often infected in their sleeping apartments or sleeping berths in trains. Of course, there is no evidence in support of this view, but it is not difficult to imagine that, in imperfectly ventilated rooms, and the compartments of the ordinary railway carriages, there may linger, for a long period, the specific germ of this malady.

He believes that some effective measures for disinfecting or renewing the furniture, curtains, and blankets in such rooms, or sleeping cars would materially diminish the risks in question. One of the most effective measures to secure disinfection is by means of formalin. Public vehicles can readily be treated with formalin spray.

Sir Richard Douglas Powell, Bart, Physician Extraordinary to the King, does not see that we can get much further in our clinical knowledge of the disease, until at least a more exact pathological knowledge, both with regard to influenza itself and its varied phases and manifestations, obtains. It is indeed a multifarious disease.

The catarrhal form of influenza, as affecting the lungs, is attended with physical signs which are absolutely characteristic of the disease, viz., the explosive inspiratory crepitus scattered through the lungs, especially the posterior lobes, often wandering from one part of the lung to another unattended with percussion dulness; associated with a training paroxysmal cough at first with little and very difficult expectoration, which in a few days becomes very profuse, glutinous, then purulent.

Many weeks before the recognition of influenza in the epidemic of 1890, he saw sporadic cases in which, with cough and fever, these peculiar physical signs were present, which, he thought, must be occasioned by a kind of inflammatory edema around scattered miliary tubercles, but they all got well. He had never seen anything like these cases before, but in the great epidemic which followed they were common enough. Of course, with pneumococcal infection super-added, the broncho-pulmonary catarrhal signs are merged in those of an ordinary pneumonia, which differs from simple pneumonia in the increased tendency to paralytic filling of the lungs and cardiac failure. He says that the cases of pneumonia in influenza are always due to pneumococcal complications.

In the middle years of the epidemic, more than at first and latterly, he used to see cases, in which towards the decline of the attack acute anginal heart seizures occurred. There was no cardiac lesion, there had not necessarily been during the attack any special strain upon the heart, the seizures were severe anginal cramps of the heart attended with small thready pulse, which occurred in quite young as well as in older people. He cannot recall any cases of this type that were actually fatal, and, although threatening enough, he felt able to give a good prognosis with some reserves with regard to the older people.

There is one point with regard to these cases, which Sir Richard has not seen alluded to, and which, although not special

to them, yet he came to think accounted for the anginal phenomena by way of increasing arterial tension, viz., that the urine towards the close of the acute attack of so far uncomplicated influenza in these cases particularly was of high specific gravity, and with such an excess of urea as to become solid with deposition of scaly nitrate crystals on the addition of nitric acid.

Of nerve phenomena, besides the intense headache, severe depression (sometimes with mental aberration resembling that which may follow enteric fever, but more remarkable as a sequel to so short an illness as influenza), and sleeplessness, he, like others, has seen a few cases of paralysis, paraplegia, and, in one case, affecting all the limbs, of apparently the same time as diphtheritic paralysis, only not involving the fauces. He has seen one case of fatal neuritis attended with intense hyperaesthesia, which was believed to be influenzal, and he has, I have recently heard of a fatal case in which the diaphragm became involved.

The prevalence of neuritis, since the beginning of the 1890 epidemic, is within the experience of most of us. A remarkable neurosis is evinced in the occasional occurrence of true spasmodic asthma, as a sequel to influenza, in middle-aged people, with no predisposition, and who have never before suffered from that malady. Many such cases have come under my notice. The majority of these recover, and they are cases in which balneo-therapeutics are valuable, but he has seen some very prolonged cases running the usual intermittent course of asthma. He is inclined to class these cases with those of spurious angina. It is clear that they are not dependent upon any coarse lesion of the nerve centres; they certainly are met with in persons of gouty diathesis.

Correspondence

To the Editor of THE MEDICAL TIMES:

In the experience of medical men, the *New York World* has long been distinguished among its contemporaries for a tendency to criticize and minimize the accomplishments of the profession of medicine in its every day work of the world. As far back as 1912, in speaking of "Christian Science in the Canal Zone," it asked: "Why should doctors expect the government to protect them from competition and vest a monopoly of the healing art in practitioners of the regular school? No such protection is extended to ministers who preach only the orthodox doctrines or to lawyers."

Coming from certain organs of public opinion, such charges could be ignored. This, however, was not the case when propounded in the editorial columns of a great journal like the *World*. About this time as a result of similar misunderstandings of this kind, a number of "regular doctors," the only kind ever employed in stamping out a pestilence, were killed by mobs in Italy while engaged in this duty. Meanwhile as a matter of public policy, the privilege was given by President Taft to the Christian Scientists to practice medicine in the Canal Zone in common with those who by purely human means had achieved there one of the greatest triumphs in the history of civilization.

Today, according to the *World*, "The medical profession as a result of the recent outbreak of influenza, appears to be richer in theories than in positive knowledge. It was caught wholly unprepared, though ample warning had been received of the ravages of this disease abroad. In a time of a great emergency, it manifested general bewilderment and felt its way uncertainly in the presence of grave danger. It is still groping in the obscure region of experiment." The only charge that can be laid at the door of medicine in the above count with any degree of truth is the failure to establish a quarantine when this disease was brought to this port. This was due to the action of official boards, not purely medical, but largely political. While the medical character does not save the members of these boards from the condemnation of their professional brethren for this dereliction, it does save them from the political consequences that would attend a similar action in any other department of the public service.

The ample warning that had been given of the approach of this plague was sounded by the orthodox organs of the medical profession. It was up to the public medical officials to have heeded and profited by it. There was nothing more that there could be done by the regular doctors until the scourge fell upon us. That in this time of great emergency they were either bewildered or groped their way with uncertainty in the presence of great danger is belied by the history of the fatalities among the medical men during the recent scourge through which we have passed. It is no discredit to medicine that it is still groping in the obscure regions of experiment in regard to the nature of this latest of afflictions of mankind, consider-

ing the many it has already solved. No more unselfish labor is devoted to human welfare than the constant and world-wide endeavor of medical men to search out the causes of disease in order to remedy them. What has already been accomplished by their unaided efforts in this field will bear comparison with that of the work of the great and favored men of the world, the warriors, the statesmen and the jurists. In this work there are no lapses, reversions or backward movements. The history of medicine today, when properly understood and read, affords the brightest pages in the story of civilization. Up to this time it has been free and untrammelled. The great danger of its future progress is the deadening influence of the participation of the State in its mission. Some of the shrewdest politicians of the world today are scheming to replace the physician in the scenes of life in which, heretofore, he alone has earned much honor if but scanty money reward. This form of compensation if reversed, would not be incompatible with the principles and practices of present-day politics.

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A Thymus Tumor Associated With Acute Lymphatic Leukemia.

Ralph H. Major of the University of Kansas School of Medicine discusses this subject interestingly. The patient, M. P., a white woman, age 42, entered the Kansas City General Hospital on January 17, 1918, complaining of pains in the back. She stated that she had been weak and had had no appetite for a month. About two weeks before admission she had begun to have headaches and pains in the right thigh, radiating from the hip down to the right ankle. She had also found her vision in the right eye impaired and had complained that "everything looked crossed." Some cough and shortness of breath had been present.

Physical examination showed a rather obese woman with a somewhat pasty color. The eyes reacted to light, the left pupil was slightly larger than the right. There was a complete paralysis of the sixth nerve on the right side and partial paralysis on the left side. The teeth showed a marked pyorrhea alveolaris, the tonsils were hypertrophied. The chest showed a few moist râles in the axilla, the spleen was enlarged and palpable. Reflexes normal. Blood-pressure 120/185.

The spinal fluid examined on February 1, 1918, showed a cell count of 20. Nonne negative; Wassermann negative.

A blood count on February 8, 1917, showed 3,400,000 red cells, 41,000 white cells, hemoglobin 60 per cent. A differential count showed polymorphonuclear neutrophils 12 per cent, small lymphocytes 35 per cent, large lymphocytes 30 per cent, transitionals 8 per cent, eosinophiles 2 per cent, myelocytes 4 per cent, degenerated forms 2 per cent, normoblasts 7 per cent.

The blood examination on February 11, 1918, showed 3,600,000 red cells, 21,000 white cells, hemoglobin 60 per cent. A differential count showed polymorphonuclear neutrophils 16 per cent, small lymphocytes 17 per cent, large lymphocytes 35 per cent, transitionals 9 per cent, eosinophiles 1 per cent, myelocytes 10 per cent, degenerated forms 1 per cent, normoblasts 10 per cent.

The patient died on February 12, the day following the second blood examination. The findings of the blood examination were clearly those of a lymphatic leukemia, and the short duration of the disease with the rapid course indicated the diagnosis of acute lymphatic leukemia.

The protocol of the autopsy, performed two and one-half hours after death, is as follows: The body is that of a white woman 165 cm. in length, weighing 65 kilos. The sternum is deformed, with an upward curve in the middle portion. Both lungs are crepitant and show some edema on cut section.

In the anterior mediastinum there is a rather firm, large tumor extending down over the heart. This mass has a thin, tough, smooth capsule; on cut section it shows a dark reddish-brown color and is of a soft, spongy, slightly granular consistency. With the naked eye there are evident numerous connective-tissue strands running throughout the tumor dividing it into compartment-like areas. When removed from the heart the posterior surface of the tumor is seen to be closely adherent to the parietal pericardium. The general shape and form suggest in appearance an enlarged uterus with its cervix turned upwards. The tumor measures 10 cm. in length, 7 cm. in width at the lower portion and 7 cm. in thickness; it weighs 189 grams.

The heart presents no especial abnormalities. The spleen is markedly enlarged, measuring 30 x 12 x 6 cm., and is very soft. The liver, pancreas, kidneys and uterus are all enlarged and of a soft, flabby consistency. The cervical, bronchial, mesenteric, retroperitoneal and inguinal lymph glands are all enlarged, but

quite discrete. On cut section, all of these glands show small irregular areas of hemorrhage. The gross appearance of the brain is normal.

Microscopic examination of the liver, heart, pancreas, kidneys and uterus shows extensive infiltration with lymphocytes. In many sections this lymphocytic infiltration is so marked that the microscopic recognition of these organs is extremely difficult. Sections of the spleen show it to be filled with large and small lymphocytes and many myelocytes. Sections made from the brain show some infiltration with lymphocytes.

Paraffine sections of the mediastinal tumor were made and stained with hematoxylin and eosin. Van Gieson's stain and Mallory's aniline blue stain. Microscopic study of these sections show that the tumor has a definite fibrous tissue capsule just under which in some places are areas of apparently normal thymus tissue. Most of the tumor is composed, however, of fine strands of connective tissue, in between which are masses of partly degenerated poorly staining cells, many of them lymphocytes and the others red blood cells. In a few places the cells are well preserved, and such areas there are collections of small and large lymphocytes and some multinucleated giant cells. Also, there are here and there masses of cells different from the others and showing an epithelioid character. Areas of hemorrhage are very extensive throughout. There are also numerous large irregular masses staining blue with hematoxylin and structures circular in shape, distinctly laminated and staining bluish or purple with hematoxylin. These structures resemble very much the so-called corpora amylacea or suggest degenerated Hassall's corpuscles. Degenerative changes are quite marked in all the sections.

The size of this mediastinal tumor, its shape and location, together with the microscopic picture, suggest strongly that we are dealing with an enlarged, persistent hyperplastic thymus which has subsequently undergone extensive degeneration with hemorrhage. The relationship between such a picture in the thymus and the clinical picture of an acute lymphatic leukemia is of interest in the light of the relationship between the thymus and the lymphatic system.

The possible role of the thymus as a leukocyte-forming organ was suggested by Ghika, who concluded that the thymus is primarily a hemopoietic organ and forms leukocytes, but probably not erythrocytes. These conclusions of Ghika were not, however, supported by the later work of Noël Paton and Goodall. These observers found that in guinea-pigs removal of the thymus produced a leukopenia which, however, was not persistent and passed away when the animals reached the age of sexual maturity. Schultz found that in dogs removal of the thymus had no permanent effect upon the blood picture. As contrasted with these findings, however, Klose, Lampe and Liesegang describe a progressive diminution in the lymphocytes in dogs which had been subjected to thymectomy. Klose describes further a lymphocytosis in dogs following injections of juice expressed from the thymus, and states also that in three patients upon whom a thymectomy was performed a permanent reduction in the number of lymphocytes followed.

The occurrence of an enlarged thymus in association with lymphatic leukemia has been noted by several observers. Obrastzow observed a case of acute lymphatic leukemia in a boy of 17, associated with an enlarged thymus "the size of a fist." McCrae in his study of lymphatic leukemia describes a case showing at autopsy an enlarged thymus gland measuring 13 x 4 cm. Séraud has studied in detail lymphatic leukemia and its association with enlargement of the thymus. Her paper describes two cases, one in a girl of five and the other in a boy of 16. The thymus in the first case measured 8 x 6 cm. and weighed 150 grams; in the second case it weighed 60 grams. Rocaz observed a case of acute lymphatic leukemia in a child of four, associated with a marked enlargement of the thymus which measured 12 x 10 x 4 cm. and weighed 200 grams. The cases of "pseudoleukemia" associated with an enlarged thymus such as those described by Eberth and Fischer are apparently cases of Hodgkin's disease.

Another group of observers have viewed this clinical picture from a different standpoint and regard the blood changes as secondary to the thymus condition. Palma describes a case of primary sarcoma of the thymus with the blood picture of a lymphatic leukemia. In his case the thymus tumor was "as large as two fists" and there were metastases into the pericardium and pleura. Brigidi and Piccali describe a malignant lymphoma of the thymus, Litten describes a round-celled sarcoma of the thymus and Coenen reports a case of lymphosarcoma of the thymus, all showing the blood picture of a lymphatic leukemia.

These two groups of observers have in all probability described the same disease picture, since we seem to have no definite criteria by which to judge which is primary, the thymus tumor or the blood disease. Moreover, the relationship between

lymphosarcoma and lymphatic leukemia is so close as to suggest that in some cases they are merely different manifestations of the same disease.

Sternberg in 1903 expressed the view that under the term "lymphatic leukemia" two disease processes were included. One group of cases showing increase of the small lymphocytes in the circulating blood with hypertrophy of the lymphatic apparatus and infiltration with lymphocytes in the various organs, he described as lymphatic leukemia. In the second group of cases he found an increase in the blood of the so-called large lymphocytes and at autopsy tumor growth in different organs. To this group Sternberg gave the name of leukosarcomatosis.

Sternberg's views have given rise to much discussion and he has defended them on numerous occasions. They have also been attacked notably by Graetz, Herzheimer and Fraenkel, the last author maintaining that leukosarcomatosis has no connection with true tumor formation, but is simply a type of leukemia tending to form tumors giving an appearance of malignant growths. Herz, after an exhaustive consideration of this subject, states that the majority of observers do not accept Sternberg's view that leukosarcomatosis is a special disease of the lymphatic apparatus, but look upon it as a leukemia of a sarcomatous character which falls into a lymphatic and myeloid type. In any case, Sternberg's work has been of great value in calling attention to the aggressive tumor-forming disposition of certain cases of leukemia, and his views have led to an emphasis upon lymphatic leukemia as primarily a disease of the lymphatic apparatus instead of a simple disorder of the blood.

It is of interest that in six of the cases reported recently by Sternberg three of the patients had large tumors in the anterior mediastinum probably of thymic origin. It should also be noted, however, that tumors of the thymus have been described without an abnormal blood picture, as, for example, the case reported by Gangee, who described a lymphosarcoma of the thymus in a child of five who never showed any increase in the number of white blood cells.

Lochte has studied an interesting condition of the thymus associated with acute lymphatic leukemia. In two cases he described a somewhat enlarged thymus in which an "epithelioid transformation" had taken place. Here the lymphoid elements of the thymus were not so striking, but there were numerous epithelioid cells, some of them multinucleated, lying free in a loose connective-tissue framework. He believed the thymus condition bore some relation to the blood disease and stated that such changes had not been observed in chronic leukemia or in pernicious anemia. Similar collections of epithelioid cells with multinucleated cells were, as previously mentioned, noted in our sections, but they did not form a predominating picture.

The microscopic examination of the thymus in our case suggests very strongly that we are dealing with a persistent thymus which has undergone a marked hyperplasia followed later by an extensive degeneration. The marked deformity of the sternum, consisting of a bowing outward with a large deep depression on the under surface corresponding to the thymus, indicates that the enlarged thymus had been present before the onset of the acute lymphatic leukemia.

This patient with a persistent enlarged thymus developing an acute lymphatic leukemia recalls the views of Herz, who lays stress upon the relationship between the status thymico-lymphaticus and lymphatic leukemia. In our case the suggestion is strong that the enlarged thymus was an indication of an abnormal lymphatic state predisposing to disease of the lymphatic apparatus which later manifested itself by the appearance of an acute lymphatic leukemia.—(*Johns Hopkins Hosp. Bull.*, Sept., 1918.)

Radium and Hodgkin's Disease.

It long since became apparent that in the discovery of radium as a therapeutic agent we failed to discover what was hoped, namely, that it would exercise a curative influence in those cases for which, up to date, we have had no remedies which can be considered as curative. It is quite true that superficial epitheliomata yield with remarkably good results to its proper application. Its employment over the area of operation, in cases in which the breast has been removed for carcinoma, seems to distinctly diminish the chances of recurrence. In cases which are by no means definite in their nature we now and then have reports in which radium has apparently worked wonders. Possibly we are expecting too much of radium when we ask that it will cure malignant growths of internal organs, when they have been so long present that metastasis to other parts of the body has occurred; nevertheless, we cannot help feeling that, just as salvarsan is a disappointment in many cases of syphilis, failing to be the universal cure that it was

hoped, so, too, radium has but a limited sphere of value, which up to date seems to be narrowing rather than increasing in its scope. That radium is a very valuable remedy in malignant disease, however, cannot be denied. Aside from the knife, it is without doubt our most potent agent, and while it cannot supplant the knife, it may do good in cases in which the use of the knife is impossible or inadvisable.

Recently Simmons and Benet have reported in the *Boston Medical and Surgical Journal* the results which they have obtained in the treatment of Hodgkin's disease with radium. Hodgkin's disease, of course, is widely separated from carcinoma, and also is widely separated from sarcoma, so far as its histological characteristics are concerned, but from the standpoint of its mortal effects it belongs in the same class with these malignant growths, since when it occurs it has been the universal experience that it is fatal within a comparatively short space of time. Unfortunately, this fatality still holds true even when radium is called into action with the hope that it may moderate, or actually cure, the disease. Thus, Simmons and Benet having used radium in nineteen cases, proved by microscopic examination to be true cases of Hodgkin's disease, conclude that the use of either radium or the x-ray is followed by a marked temporary amelioration of symptoms, by diminution in the size of the glands, and by improvement in the general condition, but they add the significant words: it must be admitted that in the majority of cases it has not prevented the progress of the disease to a fatal termination. They point out, however, an interesting difference between the action of radium upon the tissues in Hodgkin's disease and upon the tissues involved in carcinomatous growth. In Hodgkin's disease the reduction in the size of the glands takes place without burning or necrosis, and there is a definite relationship between the treatment and the effect on the glands, whereas in carcinoma necrosis is to be expected.

In the endeavor to find some explanation of the failure of radium in Hodgkin's disease, Simmons and Benet expressed the belief that such a failure is, in part, due to the fact that the treatments, in almost every instance, were necessarily confined to the mass of glands in the neck, axilla, or groin, only a few patients receiving the treatment over the spleen, abdomen, and sternum, and these treatments were probably of insufficient strength to have reached the deeply-situated lymph nodes. They also think that just as soon as the presence of Hodgkin's disease is suspected there should be systematic treatment of all the glandular regions of the body where there is the slightest evidence of enlargement of the glands, since by this means early changes can be arrested before the disease has advanced so that it is easily distinguished. It appears to one's reason to believe that it is useless to apply treatment to the glands of the neck and ignore those in the mediastinum.

The actual results obtained by Simmons and Benet are summarized as follows: Of the nineteen cases, proved beyond all doubt to be Hodgkin's disease, fourteen are dead and five are under treatment, and it is possible that these five represent the chronic form of the malady. Two of the cases that are living have been under treatment eighteen and twenty-seven months respectively and are in poor condition. Two others have been under treatment for twenty-two and thirty-six months respectively and are said to be in good condition, having only a few small shot-like glands. The fifth case is in fair condition, but has had little treatment.

The method which they have employed has been in the form of emanation, which is collected and sealed in a capillary tube, which, in turn, is enclosed in a small metal jacket, each tube representing from ten to two hundred and fifty millicuries of emanation, the strength naturally varying with the age of the tube. Such a tube is applied to the patient over two millimeters of lead and two or three centimeters of gauze screen, and kept in position from one to twelve hours. In a few cases they inserted the tube directly into the mass of glands when the glands were superficial. Where the glands were deeply situated, as in the mediastinum, or elsewhere, the tubes were placed two to four centimeters above the skin in order to obtain a maximum dose with minimum danger of burning the skin. When a skin reaction developed it usually appeared in from one to three weeks.

The application of radium only produces local changes but systematic changes, presumably the result of the changes in the glands. These constitutional disturbances consist in nausea, vomiting, prostration, and fever. It is worthy to note that these symptoms not only occur soon after exposure, but occur whether radium or the x-ray is employed. The impression which Simmons and Benet have obtained from the use of the x-ray in Hodgkin's disease is that while the glands diminish in size, the improvement is not as marked as with

radium. Improvement is usually seen in from one to three weeks after the first application.

Finally, in all of these cases it is to be recalled that a clinical differentiation between tuberculous lymph nodes, lymphosarcoma, and Hodgkin's disease is practically impossible without a microscopical study of the growth.—(*Ther. Gaz.*, Sept., 1918.)

Transfusion.

The transference of blood from an animal to a man and from man to man may be considered almost an ancient practice. In comparatively modern days Mr. Pepys describes in his diary having witnessed such a transfusion which, apparently, was not followed by anything else except good results to the patient even if Pepys's conduct afterwards was not beyond reproach. Nevertheless, the employment of pure blood, or of defibrinated blood, because of lack of asepsis or because the foreign blood agglutinated the blood corpuscles of the recipient, thereby producing disastrous effects, became so unpopular that it was rarely resorted to, the more so as it was recognized that by such transfusion certain diseases, notably syphilis, would be transmitted. When the ability to reach a positive diagnosis of syphilis depended entirely upon the truthfulness of the patient, or the manifestation of clinical signs, this danger was so real that this objection to transfusion was infinitely more powerful than it is to-day.

Recent reports from the European battlefields would seem to indicate that the danger of agglutination is more remote than has been generally thought, and, therefore, some battlefield surgeons have gone so far as to minimize it and even ignore it. This may be justifiable where an enormous number of men are to be treated and when one or two fatalities due to incompatibility between the blood of the donor and donee are of minor consequence as compared to the large number of lives which may be saved, but in civil practice we think it may be said very positively that transfusion should not be attempted, except in the presence of the most urgent need, without an agglutination test being first performed.

At no time has medical literature contained more contributions upon this subject than at present. Transfusions are being resorted to not only to combat the results of acute hemorrhage but those of chronic hemorrhage, in pernicious anemia, and in the hemorrhagic diathesis. Some advocate the direct transfusion from artery to vein by means of glass tubes coated with paraffin, of which tubes probably the best are those devised by Fauntleroy of the U. S. Navy. Others claim excellent results by withdrawing the blood from the donor by means of large syringes, the barrels of which are coated with liquid paraffin, and when directly injecting the blood into the vein of the donee. Others, fearing the formation of clots, which will result in emboli, receive the blood into a citrate of soda solution, whereby coagulation is prevented, and those who practice this method claim that the amount of citrate of soda which is necessary to prevent coagulation of the donor's blood is so small as to be without effect upon the blood of the recipient, although others have contradicted this statement.

Practically no one at the present time advocates the injection of blood serum as a substitute for blood. If they do not employ straight blood, or citrate blood, they fall back upon normal saline solution.

No one who has attempted any of the methods of transfusion has done so without learning that the process is more difficult than it appears in type, because the veins of the recipient are usually so collapsed, or so small, and are often so embedded in fat, that it is difficult to enter them without doing damage to both walls of the vessel. To meet this difficulty in children a number of clinicians, in different portions of the world, strongly advocate for infants the injection being given into the longitudinal sinus, in the middle line, at the posterior portion of the fontanelle. It has been shown that this method, if performed under ordinary aseptic precautions, is devoid of danger, and exposes the child to less trauma than an attempt to enter a vein in the arm, or, as some have advocated, the jugular vein.

Dunn and Howell of Boston, and Tarr of Portland, Oregon, and a large number of others, have advocated this method. Indeed, they have gone one step further and introduced dextrose solution in cases of profound emaciation, complicating the choleraic diarrhea of infancy, with good results, seemingly saving life in otherwise hopeless cases.

For this purpose the best method seems to be to use a 20-Cc. glass syringe attached to a piece of rubber tubing, which contains as a segment a piece of glass tubing, so that the fluid can be watched as it passes from the syringe to the needle. That the method is largely devoid of danger and comparatively easy is shown by the statement of Tarr that he has entered the sinus five hundred and seven times for blood to be used in the Wassermann test, or otherwise, and that he has admin-

istered dextrose to ninety-four infants, under two years of age, one or more times. He has also given salvarsanized solution by this avenue of entrance to fourteen infants under two years of age, and treated thirty-one cases of acidosis in infants, under two years of age, with alkaline solution with twenty-six recoveries. Indeed, in one instance in which the covering of the fontanelle was cartilaginous, a gold-plated lumbar puncture needle was used to perforate it. When blood is to be withdrawn for the Wassermann test, he believes that an ordinary 5-Cc. Luer syringe and a short needle are all that is necessary. Tarr's experience has been so favorable that he strongly advocates it in the hemorrhagic diseases of the newborn, in primary hemorrhage, posthemorrhagic anemia, and in the treatment of marasmic infants suffering from acute sepsis or anemia of one of the infectious diseases. He has used not only pure blood so injected in infants, using the 20-Cc. Luer syringe, but citrated blood as well.—(*Ther. Gaz.*, No. 9, 1918.)

Surgery

Report of 2,537 Cases of Primary Suture of War Wounds.

After trying various other methods, R. Lemaitre (*Lyon chirurg.*, 1918, xv, 65) has been converted to the primary suture of war wounds whenever it is possible. In his present report he gives his experiences, technique, and results. Since July, 1915, he has treated 2,283 wounded men at the front, some with multiple wounds; there were altogether a total of 4,227 wounds; 323 of these were not treated surgically; 2,537 were sutured primarily; 209 were treated by delayed primary suture and 307 by secondary suture; 851 wounds were not sutured for various reasons.

The present report treats only of the 2,537 wounds primarily sutured. These were distributed as follows: Wounds of the soft parts, 2,030; wounds of the large joints, 87; wounds with complete diaphyseal fractures, 263; wounds of the hand and foot, 110; cranial wounds, 40; thoracic wounds, 7.

The time covered by this report is divided into two periods: The first, July 1915, to July, 1917, in which wounds of all kinds were treated and in which primary suture was only tried in a limited number of cases; the second period, July to December, 1917 in which soft part wounds were principally the kind treated, but in which primary suture was done unless clearly contra-indicated. The results are shown in the following table:

	1st Period	2nd Period
Total number of wounds treated.....	2,336	1,891
Not treated surgically	216	107
Primary	1,046	1,491
Delayed primary or secondary suture.....	306	210
Not sutured	768	83

The table shows that in the first period about 45 per cent of the wounds received were primarily sutured, and that in the second period this was increased to 79 per cent.

The method failed in only 0.84 per cent of the cases. There were but 4 deaths, 3 in cranial injuries and 1 thoracic case. The author considers that these figures speak eloquently in favor of primary suture of war wounds. All the cases were received within twenty-four hours after injury and in the great majority within seven to fifteen hours.

The author sketches the evolution which led to the adoption of primary suture, including a short trial of the Carrel method which owing perhaps to a faulty technique did not give him good results. He dwells in great detail on the steps prior to suture; the stripping and clearance of the wounded region; removal of contused tissue which must be neither too sparing nor wasteful, careful hemostasis complete by iodine fixation of the tissues, and finally, if the laboratory and clinical findings are not contra-indicative, the suture.

The surgical conditions must be such as to render absolute asepsis during operation. This applies to every detail of instrumentation, assistance, etc. The radioscopic, general and local examinations must be detailed and complete. There are cases in which any muscle resection would be useless, and others invaded by gas gangrene where whole muscle masses must be removed. But there are signs which guide the amount of resection, viz., the normal color of the muscle mass; bleeding on the least cut; fibrillary contraction following excitation. The important point is that all dead tissue must be removed. Cutting a muscle across must be avoided if possible because in so doing nerves and vessels are cut which have dangerous consequences. Generally the amount of tissue resection is a matter for the experience of the surgeon.

After resection the tissues are thoroughly dried and treated

with iodine tincture, 1:20; this prevents the formation of hematoma, and also destroys any surface microbes. There often results after this a slight serous exudate for which a small filiform drain of silkworm gut is left for three or four days.

According to the circumstances the surgeon may adopt either: (1) immediate primary suture; or (2) delayed primary suture in which after a few days the edges are brought together without any resection or edge freshening; or (3) secondary suture in which the wound is closed after resection of the cicatricial tissue. Whenever possible the author adopts immediate suture. Where this is not possible, the wound is subjected to clinical and bacteriologic control and the period of delayed primary suture depends on this. Wounds which cannot be primarily sutured have a simple dry dressing applied which is renewed every five or six days. Such wounds are found to suppurate very little or not at all. Disinfection of the wound is left to itself. The author's experience convinces him that wounds so treated arrive more quickly at the early secondary suture stage than if treated by the Carrel-Dakin method.

Contra-indications to immediate suture are spreading infection, gas gangrene, a bad general state, shock, shattered limbs, and an associated lesion of an important vessel. Slight fever does not prevent healing by first intention.

Nearly all the author's patients have joined their regiments after a period of hospitalization varying from fifteen days to two months.

In conclusion, the author says that there is no necessity to defend immediate primary suture; the results speak for it. Opponents of the method have charged that it requires a considerable amount of resection or at least greater than that necessitated in continuous irrigation by disinfectants. This is not the author's view. The amount in each case is the same. To do more than is necessary in either case is to do too much. The method of immediate suture on account of its rationality, its facility, and accordance with the principles of sound surgery have made it now classical in the treatment of war wounds and to oppose it is to be unjustly prejudiced.—(*S. G. & O.*, Oct., 1918.)

Peptic Ulcer.

The toxemic origin of peptic ulcer is generally recognized and there seems little doubt that infection is the primary cause of the toxemia in the vast majority of cases, says J. B. Deaver. Furthermore, clinical experience in recent years is indicating more and more clearly that the original site of the infection lies in the vermiform appendix, and Rosenow's demonstration of the elective localization of micro-organisms, especially streptococci, is additional confirmation of the infectious origin of these ulcers and similar lesions. From Bolton's careful histological studies it is learned that the initial lesions which give rise to ulcer of the stomach are: (1) localized necrosis of the mucous membrane; (2) localized hemorrhage; and (3) inflammation of the lymphatic follicles.

1. The common cause of necrosis is bacterial infection or its toxins circulating in the blood stream and, as pointed out by Bolton, the cells of the gastric mucosa being primarily attacked by the poisons in the circulation, necrosis is readily produced by the local action of the gastric juice. Necrosis may arise in this way without any preceding hemorrhage or lymphatic inflammation.

2. Hemorrhage is an actual and frequent cause of ulcer and is likewise due to bacterial toxins circulating in the blood stream, which, destroying the endothelial cells of the capillaries, pave the way for the local destructive action of the gastric juice.

3. Inflammation of one or more of the lymphatic follicles, so thickly studded along the lesser curvature of the stomach, especially toward the pylorus, may give rise to a submucous abscess which by rupture into the gastric cavity allows the juice to act on the base of the ulceration thus exposed.

In fact, it is doubtful whether a true peptic ulcer, as distinguished from an erosion, ever heals under purely medical treatment. The so-called cures represent a latency which, there is no telling how soon, is apt to be aroused to activity. With the aid of the x-ray, the various clinical tests, and a carefully taken history, a correct pre-operative diagnosis of ulcer has been made in 88 per cent of the author's patients during the past year. Of the patients operated upon for peptic ulcers during the past eighteen months, 90 per cent of those traced reported complete cures.

For a chronic ulcer of the duodenum he believes that excision of the ulcer is the best method of treatment. If the ulcer is easily accessible, which it usually is if located on the anterior

(Continued on p. 22)